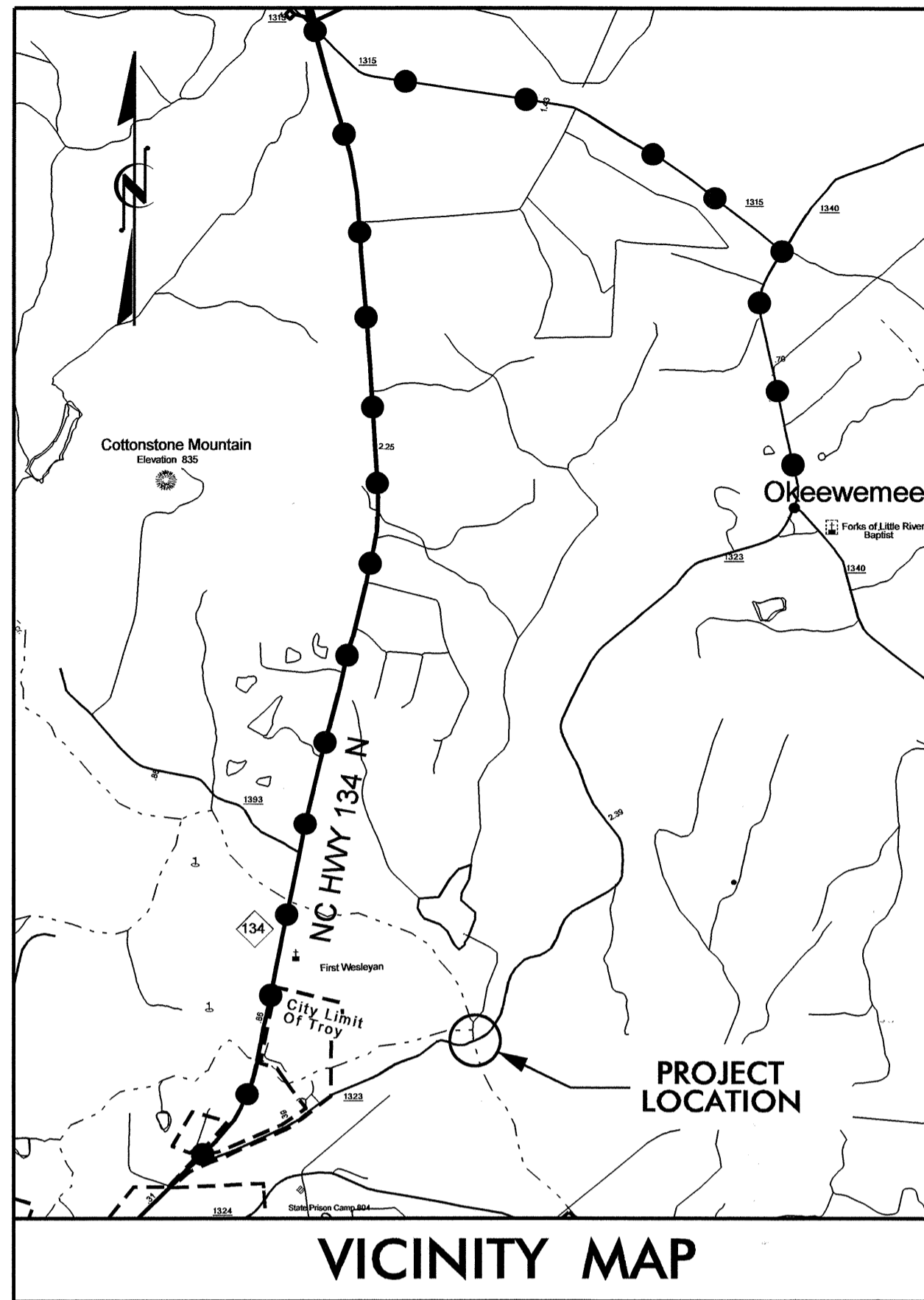


CONTRACT: C202439 TIP PROJECT: B-4582

STRUCTURE

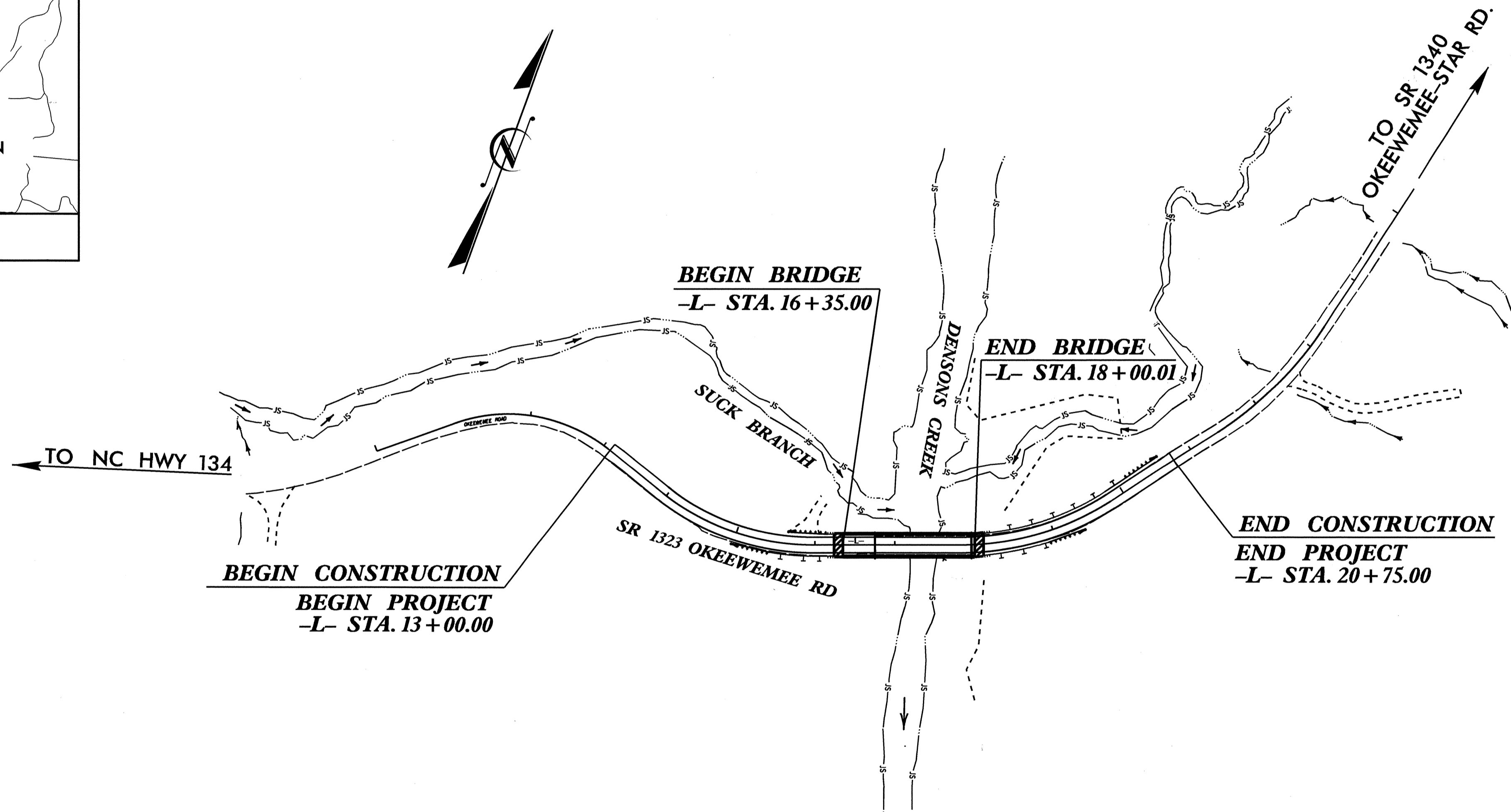


●●● OFF-SITE DETOUR

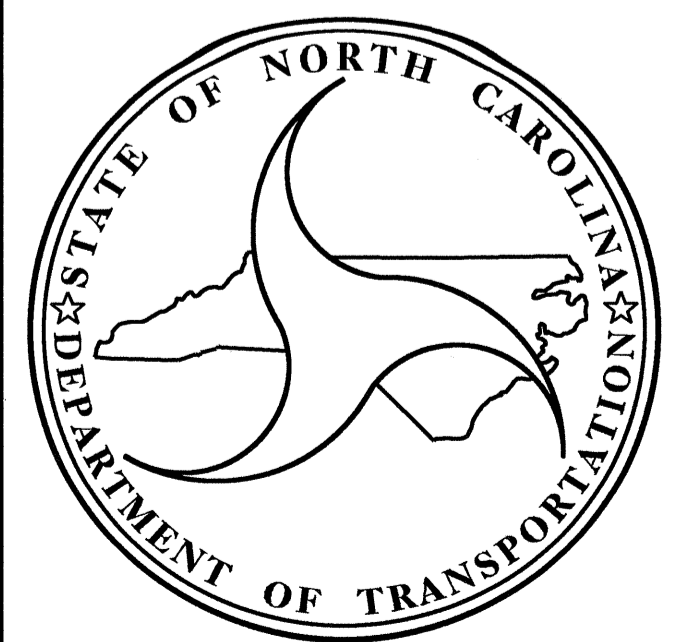
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# MONTGOMERY COUNTY

**LOCATION:** BRIDGE NO. 121 OVER DENSONS CREEK ON SR 1323 (OKEEWEMEE RD.)  
**TYPE OF WORK:** GRADING, DRAINAGE, PAVING & STRUCTURE



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4582		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33783.1.1	BRZ-1323(1)	P.E.	
33783.2.1	BRZ-1323(1)	UTIL. & RW	
33783.3.1	BRZ-1323(1)	CONST.	



**DESIGN DATA**

ADT 2011	=	860
ADT 2031	=	1320
DHV	=	13 %
D	=	65 %
T	=	5 % *
V	=	60 MPH
CLASS	=	RURAL LOCAL SUBREGIONAL TIER
* TTST	=	1% DUAL = 4%

**PROJECT LENGTH**

LENGTH ROADWAY PROJECT B-4582	=	0.116 MI
LENGTH STRUCTURE PROJECT B-4582	=	0.031 MI
TOTAL LENGTH STATE PROJECT B-4582	=	0.147 MI

Prepared in the Office of:

**DIVISION OF HIGHWAYS**

2006 STANDARD SPECIFICATIONS

LETTING DATE :  
AUGUST 16, 2011

J. C. FRYE, P.E.  
PROJECT ENGINEER

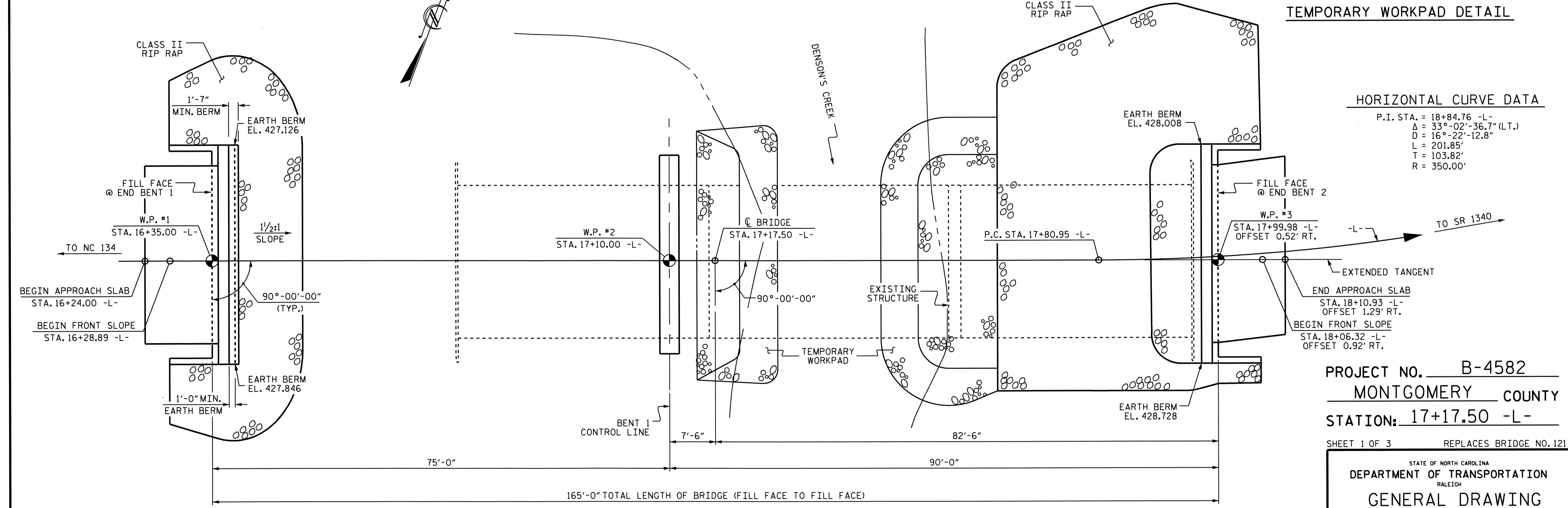
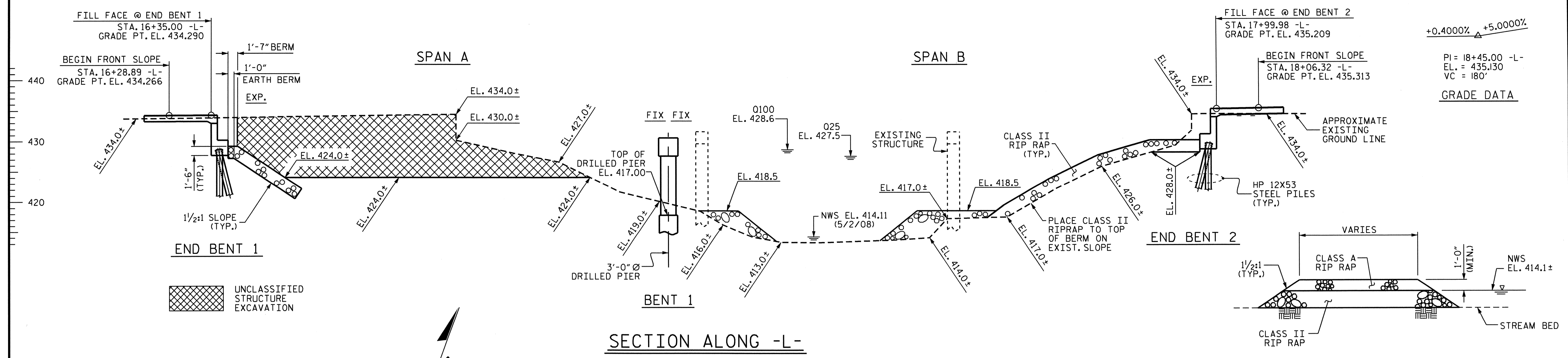
T. H. FANG, P.E.  
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT  
1000 BIRCH RIDGE DR.  
RALEIGH, N.C. 27610

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER \_\_\_\_\_ P.E.  
DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

APPROVED \_\_\_\_\_  
DIVISION ADMINISTRATOR DATE \_\_\_\_\_



**PROJECT NO. B-4582**  
**MONTGOMERY COUNTY**  
**STATION: 17+17.50 -L-**  
 SHEET 1 OF 3 REPLACES BRIDGE NO. 121

**DEPARTMENT OF TRANSPORTATION**  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE OVER DENSONS CREEK ON SR 1323 (OKEEWEMEE RD) BETWEEN NC 134 AND SR 1340 (OKEEWEMEE-STAR RD)

**REVISIONS**

NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

**SHEET NO. S-1**  
 TOTAL SHEETS 22

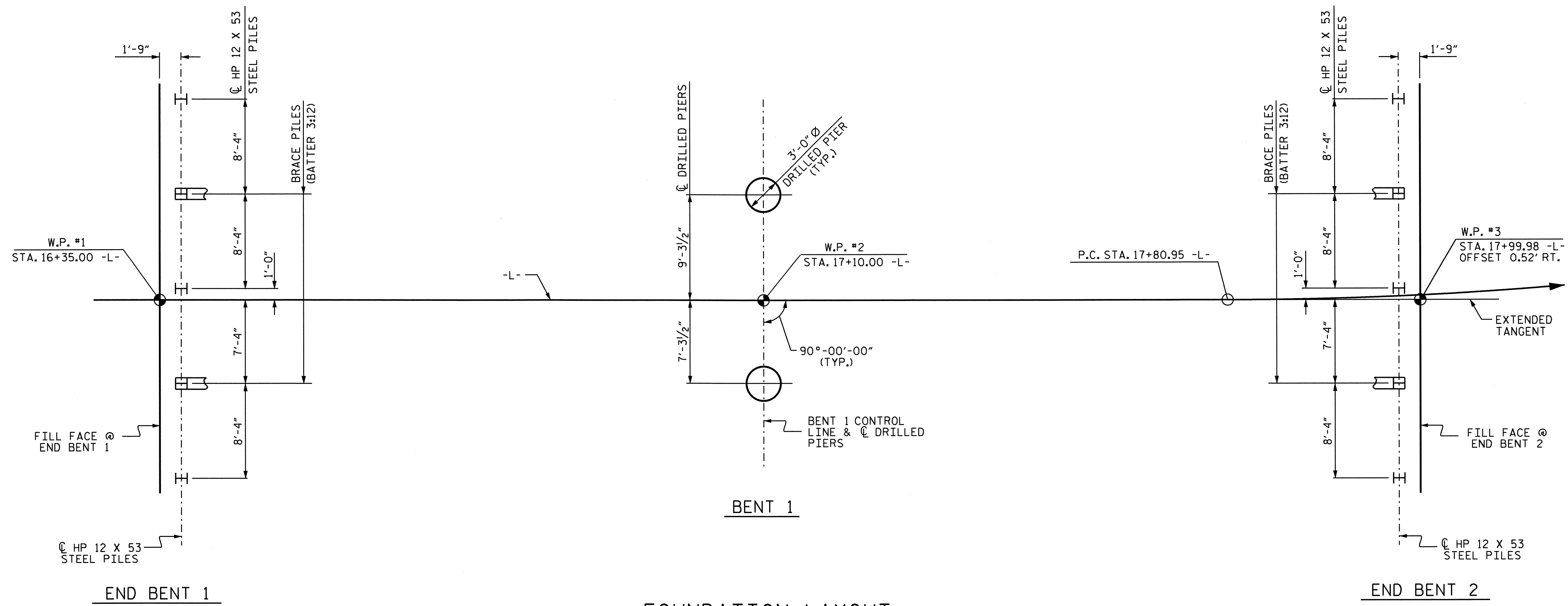
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 ffang

**PROFESSIONAL ENGINEER SEAL 11915**  
**PROFESSIONAL ENGINEER SEAL 16301**

6/16/11

NCODS

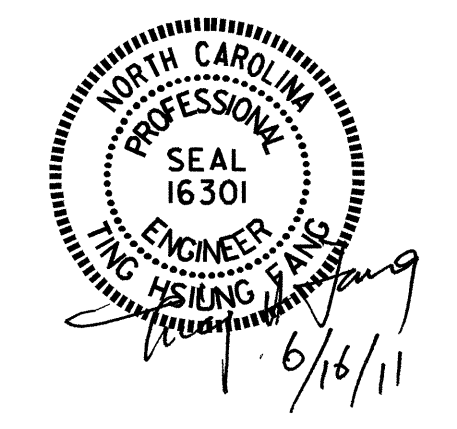
DRAWN BY: S. DOMBROWSKI DATE: 10/30/08  
 CHECKED BY: P.K. NEWTON DATE: 11/6/08



**FOUNDATION LAYOUT**  
 DIMENSIONS LOCATING PILES AND DRILLED PIERS ARE SHOWN TO THE CENTERLINE OF PILES & DRILLED PIERS.

**NOTES**

- FOR PILES, SEE SPECIAL PROVISIONS.
- PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 185 TONS PER PILE.
- PILES AT END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 200 TONS PER PILE.
- STEEL H PILE POINTS ARE REQUIRED FOR STEEL H PILES AT END BENTS 1 AND 2. FOR STEEL PILE POINTS, SEE PILES PROVISION.
- FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.
- DRILLED PIERS AT BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 470 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 65 TSF.
- INSTALL DRILLED PIERS AT BENT 1 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 391 FT. AND SATISFY THE REQUIRED TIP RESISTANCE.
- SPT TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SPT TESTING.
- PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT 1. IF REQUIRED, DO NOT EXTEND CASING BELOW ELEVATION 409 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.
- CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- INTEGRITY TESTING MAY BE REQUIRED FOR DRILLED PIERS. IF REQUIRED AND AFTER DRILLED PIER CONCRETE ACHIEVES 3000 PSI COMPRESSIVE STRENGTH, PROVIDE ACCESS TO AND PREPARE TOP OF PIERS AS DIRECTED BY THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR AND PERFORM INTEGRITY TESTING. DO NOT CONSTRUCT COLUMNS OR FOOTINGS ON TOP OF PIERS THAT ARE TESTED UNTIL TEST RESULTS ARE ACCEPTABLE. PAYMENT FOR COSTS ASSOCIATED WITH INTEGRITY TESTING WILL BE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID FOR THE DRILLED PIERS.
- THE SCOUR CRITICAL ELEVATION FOR BENT 1 IS ELEVATION 407 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.



PROJECT NO. B-4582  
MONTGOMERY COUNTY  
 STATION: 17+17.50 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 BRIDGE OVER DENSONS  
 CREEK ON SR 1323 (OKEEWEMEE  
 RD) BETWEEN NC 134 AND  
 SR 1340 (OKEEWEMEE-STAR RD)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : HARISH SHAH DATE : 3-12-10  
 CHECKED BY : J.A. YANNACCONE DATE : 3-9-11

16-JUN-2011 11:42  
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 tfang

TOTAL BILL OF MATERIAL

	CONST. MAINT. & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	3'-0" Ø DRILLED PIERS IN SOIL	3'-0" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIERS	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP 12 X 53 STEEL PILES	STEEL PILE POINTS	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAMS		
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EA.	EA.	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	EA.	LIN. FT.	TONS	SO. YD.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE																325.50			LUMP SUM	20	1,626.25
END BENT 1								LUMP SUM	18.1		2,396		5	75	5		135	150			
BENT 1			22.00	30.00	16.00				17.4		6,833	1,266									
END BENT 2									18.1		2,396		5	75	5		260	290			
TOTAL	LUMP SUM	LUMP SUM	22.00	30.00	16.00	2	1	LUMP SUM	53.6	LUMP SUM	11,625	1,266	10	150	10	325.50	395	440	LUMP SUM	20	1,626.25

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY, 2001.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

FOR VERTICAL CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.

IN AS MUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR REMOVAL OF EXISTING STRUCTURE AT STATION 17+17.50 -L-.

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS: 1 @ 40'-8", 1 @ 40'-1" & 1 @ 40'-8" WITH A CLEAR ROADWAY WIDTH OF 25'-2" AND A TIMBER DECK ON STEEL FLOOR BEAM SYSTEM; SUBSTRUCTURE CONSISTING OF REINFORCED CONCRETE SPILL THROUGH ABUTMENTS, INTERIOR BENTS: RC POST & BEAM AND LOCATED ON THE PROPOSED STRUCTURE SITE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT. FOR REMOVAL OF EXISTING BRIDGE, SEE SPECIAL PROVISIONS.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF STANDARD SPECIFICATIONS.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

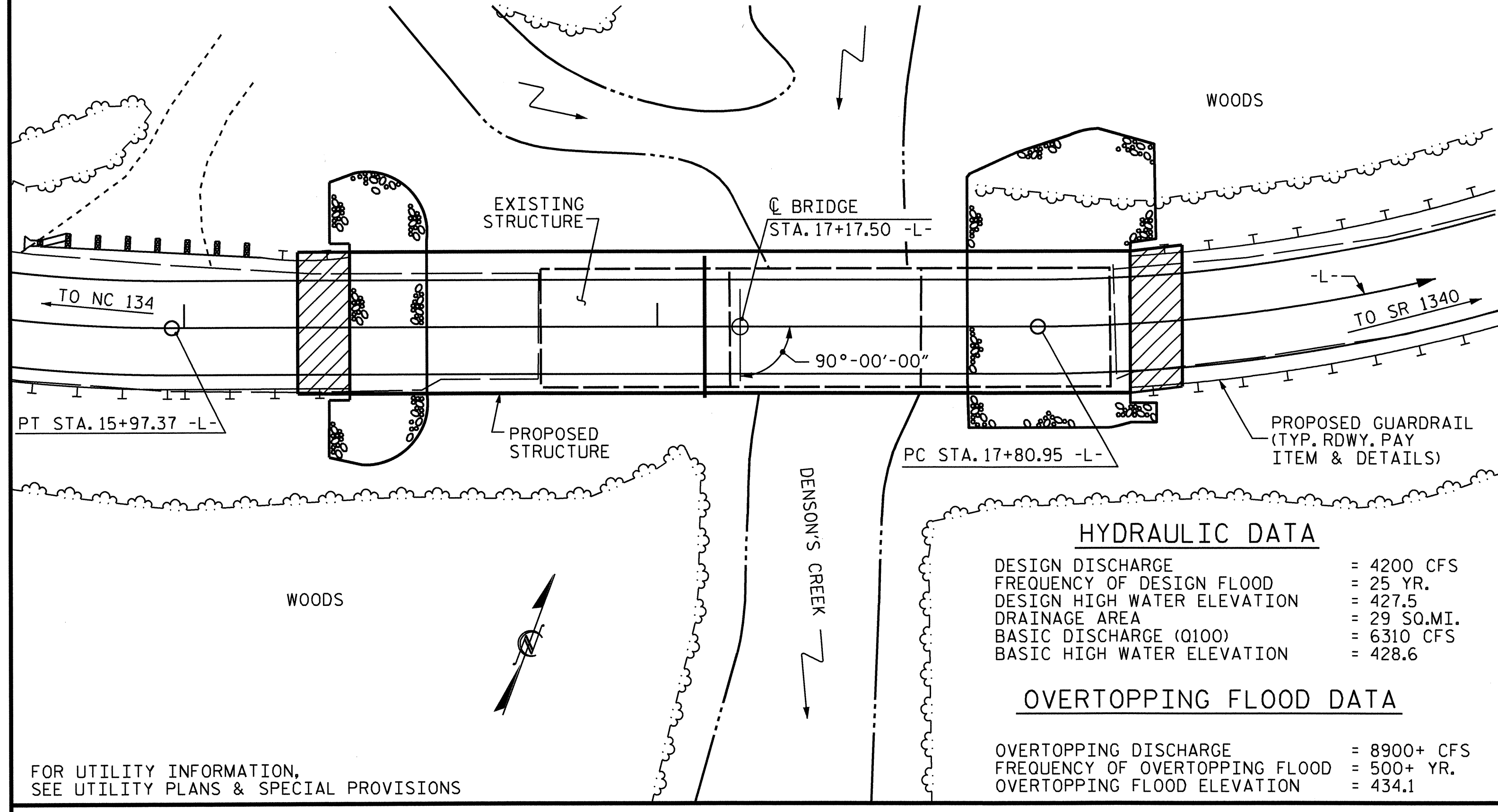
FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 17+17.50 -L-, SEE SPECIAL PROVISIONS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 35 FT. LEFT SIDE AND 45 FT. RIGHT AT END BENT 1 OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 17+17.50 -L-.

BM #1: R.R. SPIKE IN BASE OF 6" ELM, STA. 19+34.00 -BL- 175' LT., EL. 421.180



**HYDRAULIC DATA**

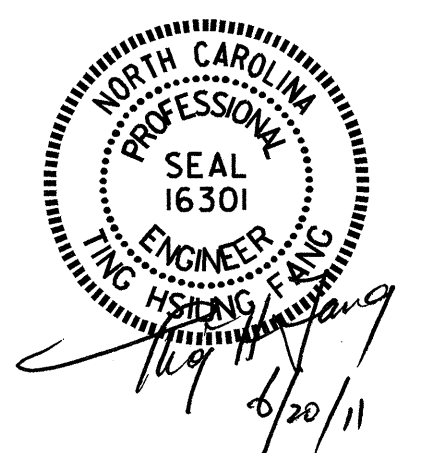
DESIGN DISCHARGE	= 4200 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YR.
DESIGN HIGH WATER ELEVATION	= 427.5
DRAINAGE AREA	= 29 SQ.MI.
BASIC DISCHARGE (Q100)	= 6310 CFS
BASIC HIGH WATER ELEVATION	= 428.6

**OVERTOPPING FLOOD DATA**

OVERTOPPING DISCHARGE	= 8900+ CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YR.
OVERTOPPING FLOOD ELEVATION	= 434.1

FOR UTILITY INFORMATION, SEE UTILITY PLANS & SPECIAL PROVISIONS

LOCATION SKETCH



PROJECT NO. B-4582  
MONTGOMERY COUNTY  
 STATION: 17+17.50 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**

FOR BRIDGE OVER DENSONS CREEK ON SR 1323 (OKEEWEMEE RD) BETWEEN NC 134 AND SR 1340 (OKEEWEMEE-STAR RD)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : J. A. YANNACCONO DATE : 12/22/09  
 CHECKED BY : T.H. FANG DATE : 1/11/10

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	$\gamma_{dc}$	$\gamma_{dw}$
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE BOX BEAM UNITS

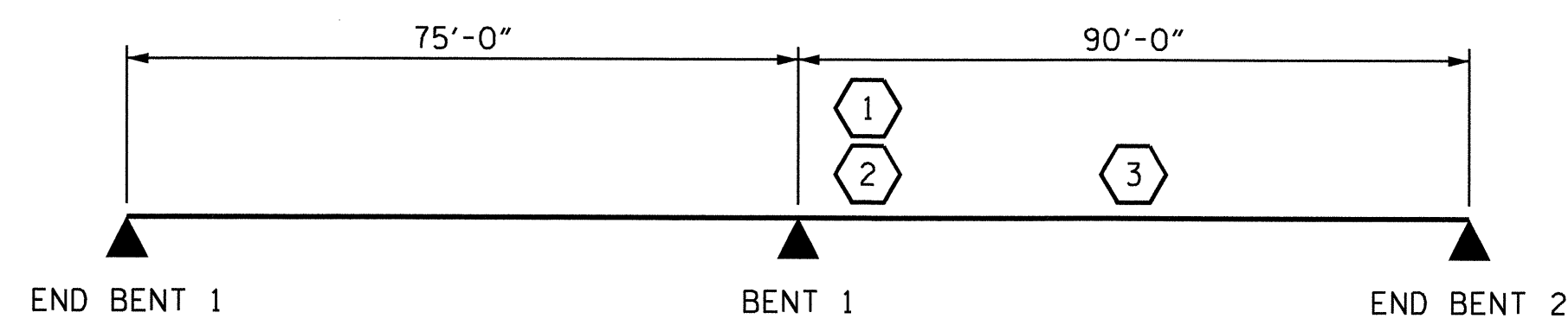
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	BOX BEAM LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	BOX BEAM LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		BOX BEAM LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.084	--	1.75	0.273	1.10	B	EL	43.657	0.497	1.08	B	EL	4.366	0.80	0.273	1.13	B	EL	43.657		
	HL-93 (OPERATING)	N/A	--	1.405	--	1.35	0.273	1.43	B	EL	43.657	0.497	1.41	B	EL	4.366	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.423	51.216	1.75	0.273	1.50	B	EL	43.657	0.497	1.42	B	EL	4.366	0.80	0.273	1.53	B	EL	43.657		
	HS-20 (OPERATING)	36.000	--	1.844	66.391	1.35	0.273	1.94	B	EL	43.657	0.497	1.84	B	EL	4.366	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500	--	3.555	47.987	1.40	0.273	4.36	B	EL	43.657	0.497	4.34	B	EL	4.366	0.80	0.273	3.55	B	EL	43.657	
		SNGARBS2	20.000	--	2.601	52.018	1.40	0.273	3.19	B	EL	43.657	0.497	3.05	B	EL	4.366	0.80	0.273	2.60	B	EL	43.657	
		SNAGRIS2	22.000	--	2.443	53.757	1.40	0.273	3.00	B	EL	43.657	0.497	2.82	B	EL	4.366	0.80	0.273	2.44	B	EL	43.657	
		SNCOTTS3	27.250	--	1.767	48.163	1.40	0.273	2.17	B	EL	43.657	0.497	2.17	B	EL	4.366	0.80	0.273	1.77	B	EL	43.657	
		SNAGGRS4	34.925	--	1.459	50.940	1.40	0.273	1.79	B	EL	43.657	0.497	1.77	B	EL	4.366	0.80	0.273	1.46	B	EL	43.657	
		SNS5A	35.550	--	1.428	50.750	1.40	0.273	1.75	B	EL	43.657	0.497	1.78	B	EL	4.366	0.80	0.273	1.43	B	EL	43.657	
		SNS6A	39.950	--	1.302	52.023	1.40	0.273	1.60	B	EL	43.657	0.497	1.62	B	EL	4.366	0.80	0.273	1.30	B	EL	43.657	
		SNS7B	42.000	--	1.240	52.072	1.40	0.273	1.52	B	EL	43.657	0.497	1.58	B	EL	4.366	0.80	0.273	1.24	B	EL	43.657	
	TRUCK TRACTOR SEMI-TRAILER (TST)	TNAGRIT3	33.000	--	1.586	52.329	1.40	0.273	1.95	B	EL	43.657	0.497	1.93	B	EL	4.366	0.80	0.273	1.59	B	EL	43.657	
		TNT4A	33.075	--	1.591	52.611	1.40	0.273	1.95	B	EL	43.657	0.497	1.89	B	EL	4.366	0.80	0.273	1.59	B	EL	43.657	
		TNT6A	41.600	--	1.293	53.806	1.40	0.273	1.59	B	EL	43.657	0.497	1.66	B	EL	4.366	0.80	0.273	1.29	B	EL	43.657	
		TNT7A	42.000	--	1.296	54.435	1.40	0.273	1.59	B	EL	43.657	0.497	1.63	B	EL	4.366	0.80	0.273	1.30	B	EL	43.657	
		TNT7B	42.000	--	1.332	55.925	1.40	0.273	1.63	B	EL	43.657	0.497	1.55	B	EL	4.366	0.80	0.273	1.33	B	EL	43.657	
		TNAGRIT4	43.000	--	1.274	54.764	1.40	0.273	1.56	B	EL	43.657	0.497	1.50	B	EL	4.366	0.80	0.273	1.27	B	EL	43.657	
		TNAGT5A	45.000	--	1.204	54.184	1.40	0.273	1.48	B	EL	43.657	0.497	1.48	B	EL	4.366	0.80	0.273	1.20	B	EL	43.657	
TNAGT5B	45.000	③	1.192	53.659	1.40	0.273	1.46	B	EL	43.657	0.497	1.43	B	EL	4.366	0.80	0.273	1.19	B	EL	43.657			

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

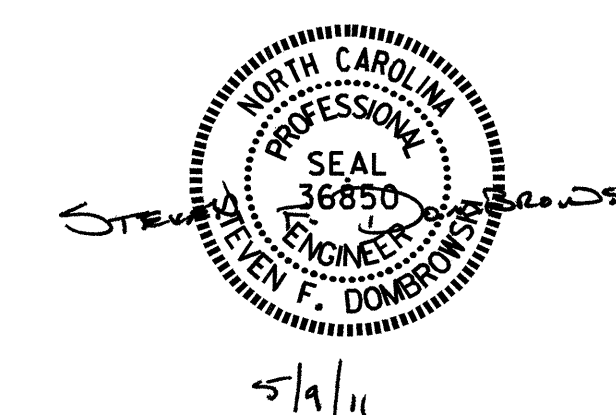
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

#	CONTROLLING LOAD RATING
①	DESIGN LOAD RATING (HL-93)
②	DESIGN LOAD RATING (HS-20)
③	LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	
BOX BEAM LOCATION	
I - INTERIOR BOX BEAM	
EL - EXTERIOR LEFT BOX BEAM	
ER - EXTERIOR RIGHT BOX BEAM	



LRFR SUMMARY

PROJECT NO. B-4582  
MONTGOMERY COUNTY  
 STATION: 17+17.50 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 LRFR SUMMARY FOR  
 PRESTRESSED CONCRETE  
 BOX BEAM UNITS  
 (NON-INTERSTATE TRAFFIC)

ASSEMBLED BY : S. DOMBROWSKI	DATE : 1/24/10
CHECKED BY : J.A. YANACCONI	DATE : 3/10/11
DRAWN BY : MAA	1/08
CHECKED BY : GM/DI	2/08
REV. 11/2/08R	MAA/GM

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	
TOTAL SHEETS				22

**NOTES**

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUDED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH GROUT. THE 2 1/2" Ø DOWEL HOLES AT EXPANSION ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH JOINT SEALER MATERIAL TO 1 1/2" ABOVE THE TOP OF DOWELS AND THEN FILLED WITH GROUT.

THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT. THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4300 PSI.

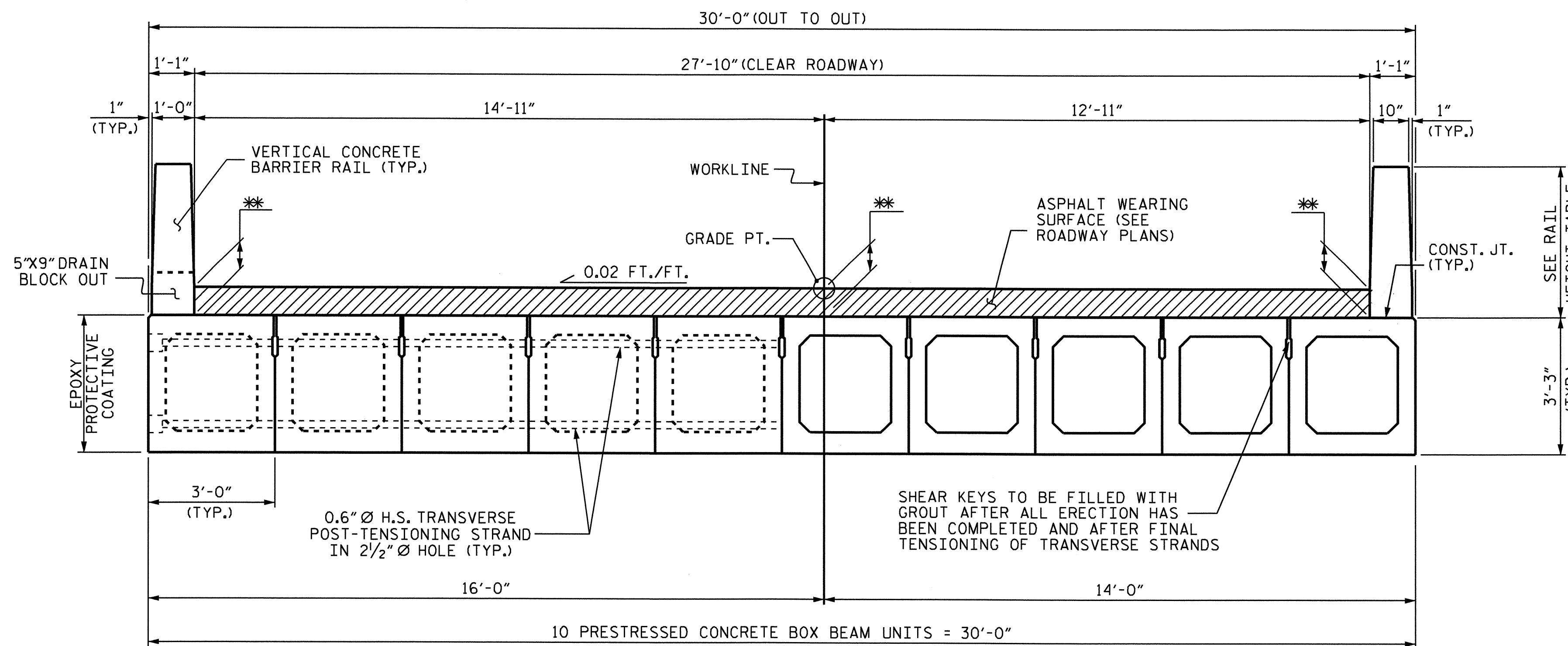
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS AND EXTERIOR BOX BEAMS WHERE DRAIN BLOCKOUTS ARE LOCATED.

VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

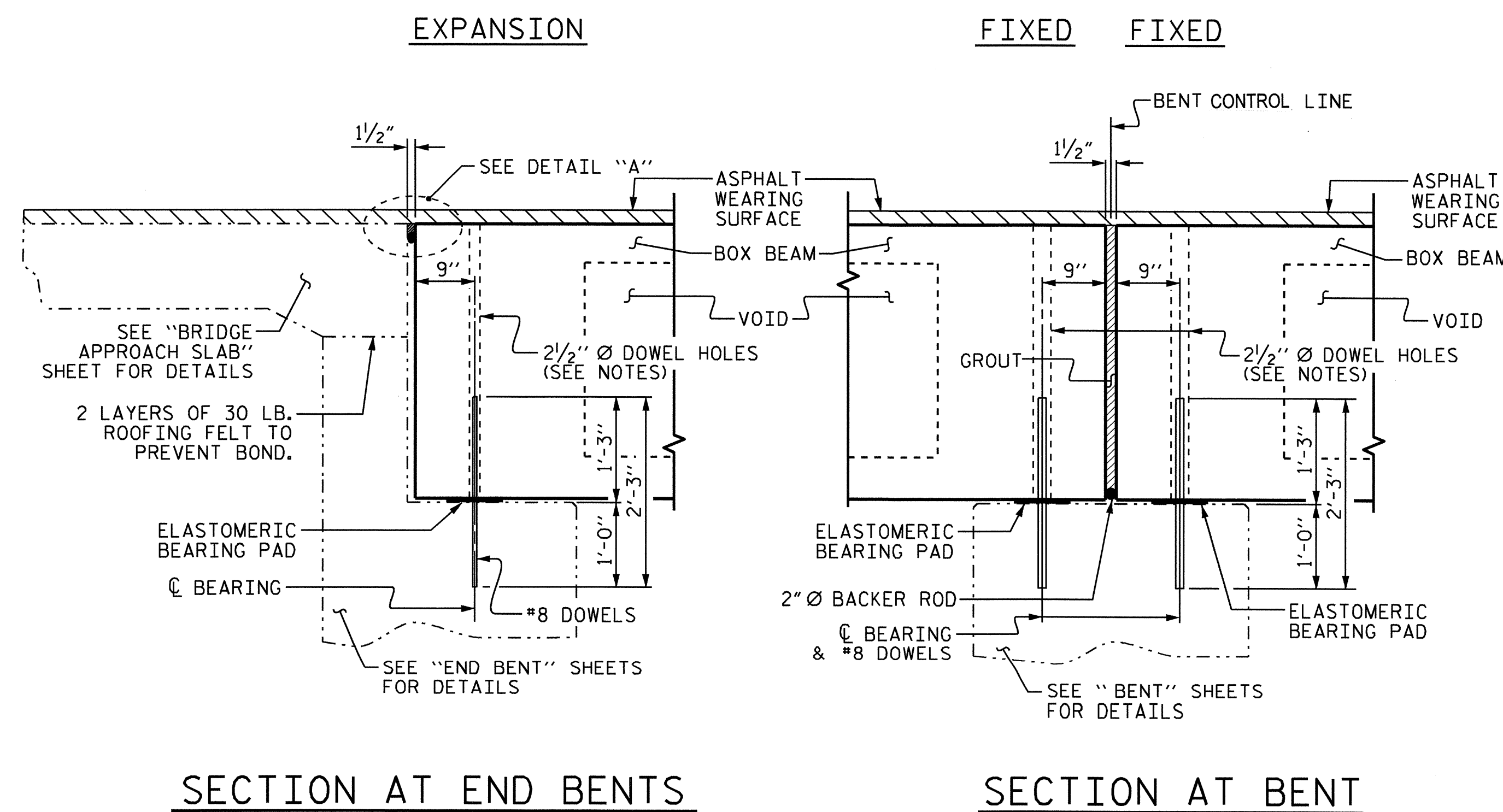
THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.



**TYPICAL SECTION**

THE MINIMUM HEIGHT OF THE BARRIER RAIL IS SHOWN. THE HEIGHT OF THE BARRIER RAIL VARIES WHILE THE TOP OF THE RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE.

\*\* SEE TABLES FOR DIMENSIONS



**SECTION AT END BENTS**

**SECTION AT BENT**

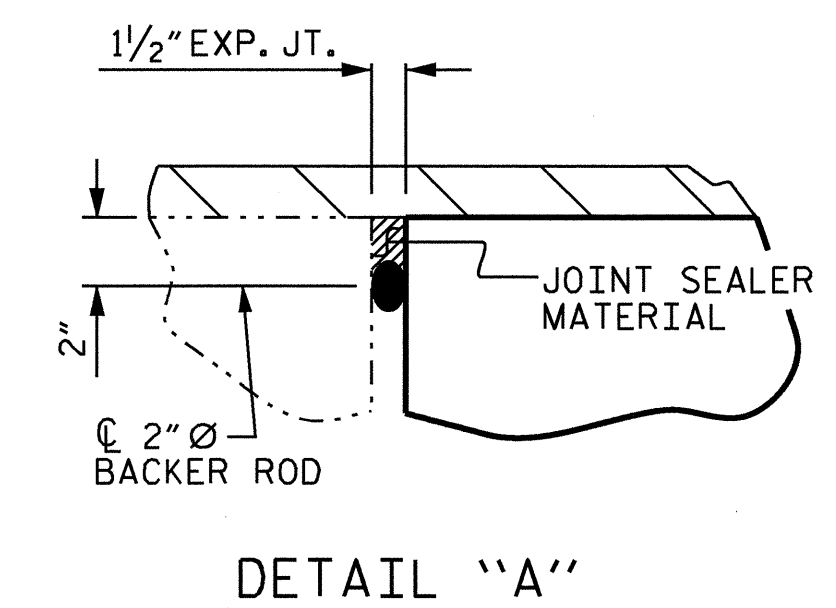
**ASPHALT WEARING SURFACE THICKNESS TABLE**  
BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS.

SPAN	** AT C BEARINGS	** AT MID-SPAN
A	5 1/2"	4 1/8"
B	5 1/2"	1 5/8"

NOTE: THICKNESS VARIES BETWEEN C BEARING AND MID-SPAN FOR ALL SPANS.

**RAIL HEIGHT TABLE**  
BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS.

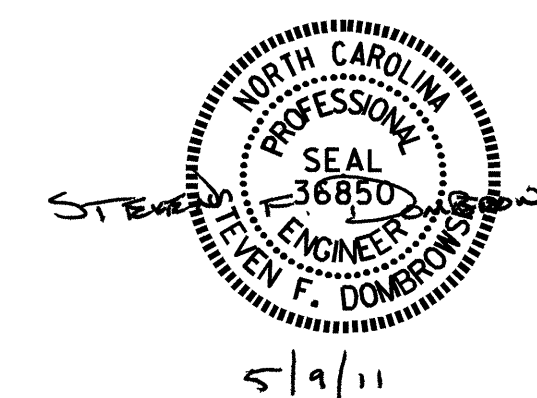
SPAN	AT C BEARINGS	AT MID-SPAN
A	3'-1 1/2"	3'-0 1/8"
B	3'-1 1/2"	2'-9 5/8"



PROJECT NO. B-4582  
MONTGOMERY COUNTY  
STATION: 17+17.50 -L-

SHEET 1 OF 6

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
3'-0" X 3'-3"  
PRESTRESSED CONCRETE  
BOX BEAM UNIT



ASSEMBLED BY : S. DOMBROWSKI DATE : 2/5/09  
CHECKED BY : HARISH SHAH DATE : 5/3/10  
DRAWN BY : TLA 5/05 ADDED 7/11/05R  
CHECKED BY : GM 6/05 REV. 5/1/06R KMM/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			22
2			4			

75'-0" (W.P. #1 TO W.P. #2)

73'-9 3/4"

8'-0 3/8"

19'-3"

19'-3"

19'-3"

8'-0 3/8"

6'-0"

7'-5" X 9" DRAIN BLOCKOUT @ 11'-0" CTS.

3'-0"

BENT 1 CONTROL LINE

DIAPHRAGM (TYP.)

GUTTERLINE

9" TO C BEARING (TYP.)

2 - 0.6" Ø L.R. TRANSVERSE POST-TENSIONING STRANDS IN 2 1/2" Ø HOLES (TYP.)

FILL FACE @ END BENT 1

W.P. #1

90°-00'-00" (TYP.)

6-#5 B1 (2 BAR RUN) (SEE SHEET 4 OF 6) (2'-2" MIN. SPLICE) (TYP. EA. BOX BEAM)

W.P. #2

27'-10" (CLEAR ROADWAY)

10 PRESTRESSED CONCRETE BOX BEAM UNITS = 30'-0"

GUTTERLINE

10-#5 B3 IN VERTICAL CONCRETE BARRIER RAIL (TYP. EA. SEGMENT) (TYP. EA. SIDE)

SEE GROUDED RECESS DETAIL, SHEET 6 OF 6. (TYP.)

1/2" EXP. JT. MAT'L. IN BARRIER RAIL (TYP. BETWEEN SEGMENTS)

24'-7 1/4" (TYP. EA. SIDE)

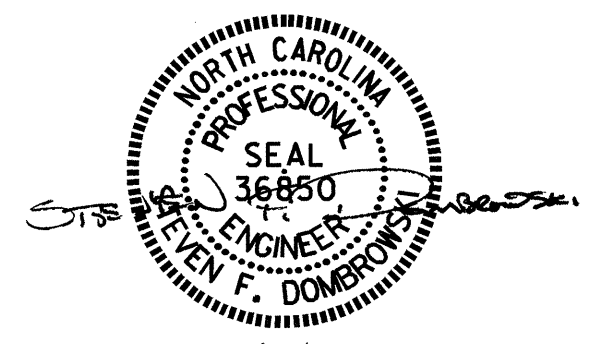
24'-7 1/4" (TYP. EA. SIDE)

24'-7 1/4" (TYP. EA. SIDE)

98-#5 S5 @ 9" CTS. IN BOX BEAM (TYP. EA. SIDE)  
98-#5 S6 @ 9" CTS. IN BARRIER RAIL (TYP. EA. SIDE)

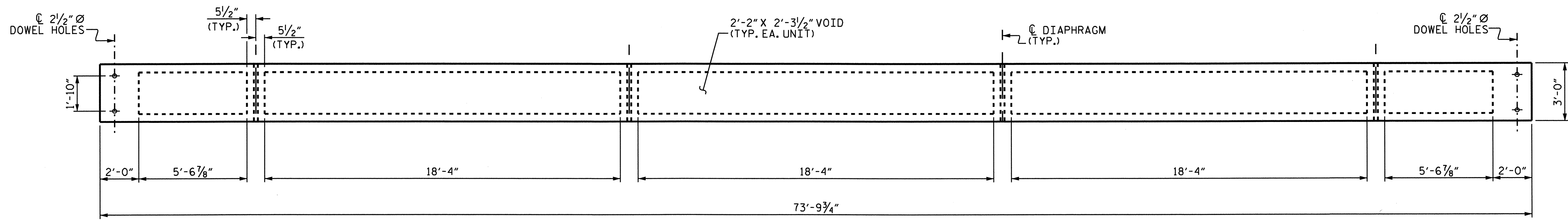
6 3/8"

6 3/8"



6/16/11

### PLAN OF SPAN A



### PLAN OF BOX BEAM UNIT - SPAN A

PROJECT NO. B-4582  
MONTGOMERY COUNTY  
STATION: 17+17.50 -L-  
SHEET 2 OF 6

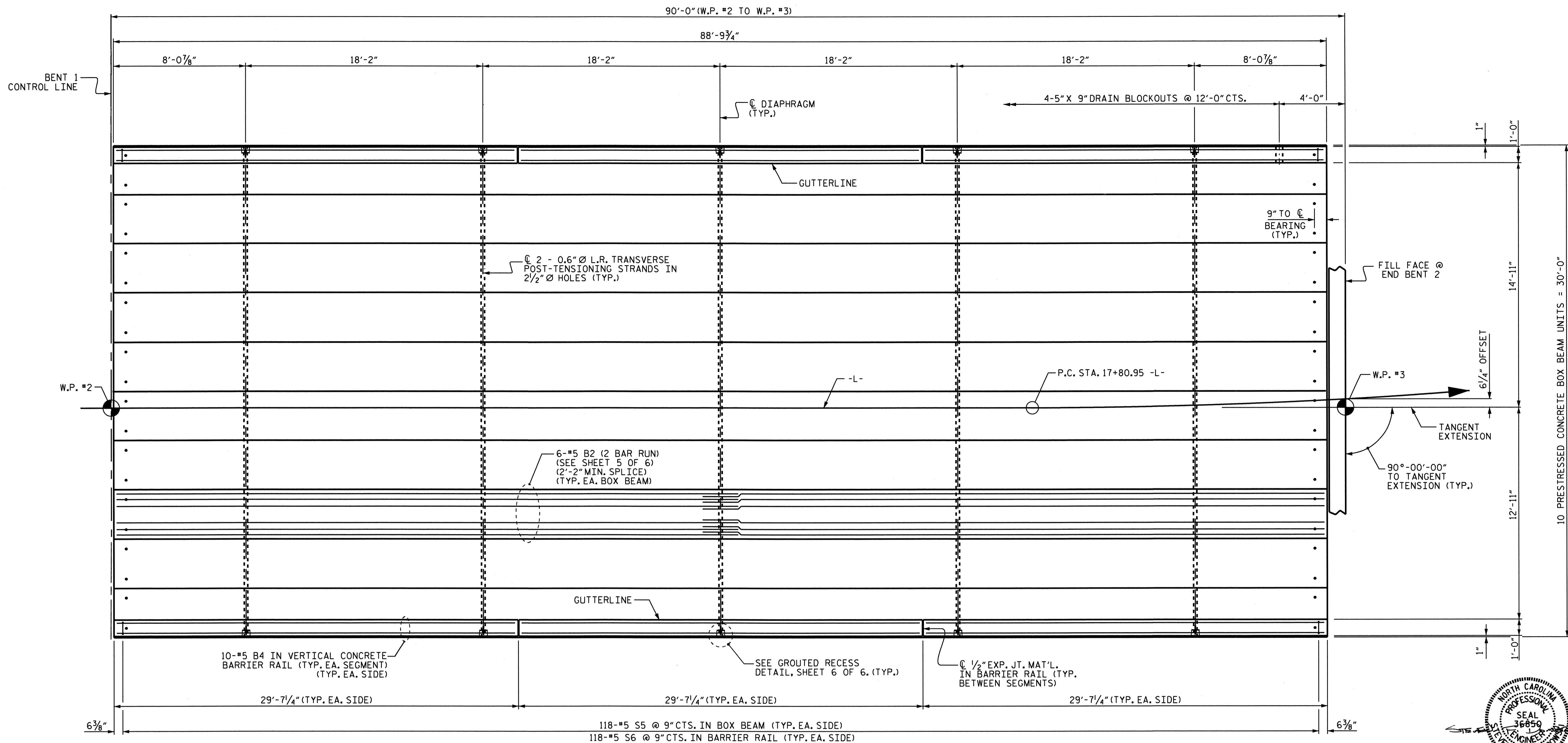
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
PLAN OF SPAN A

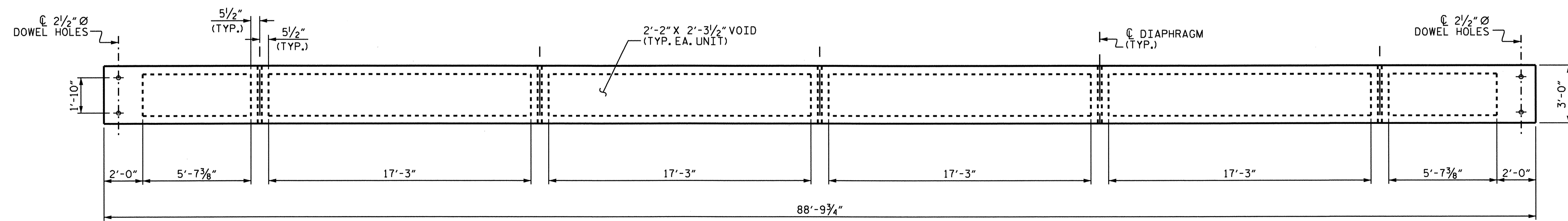
DRAWN BY : S. DOMBROWSKI DATE : 2/5/09  
CHECKED BY : HARISH SHAH DATE : 5/3/10

16-JUN-2011 11:09  
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Tfang

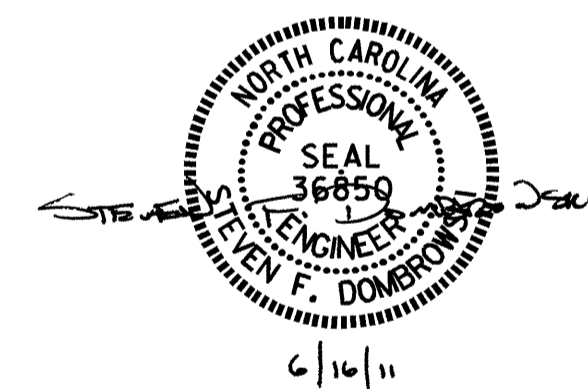
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			22



PLAN OF SPAN B



PLAN OF BOX BEAM UNIT - SPAN B



PROJECT NO. B-4582  
MONTGOMERY COUNTY  
 STATION: 17+17.50 -L-  
 SHEET 3 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

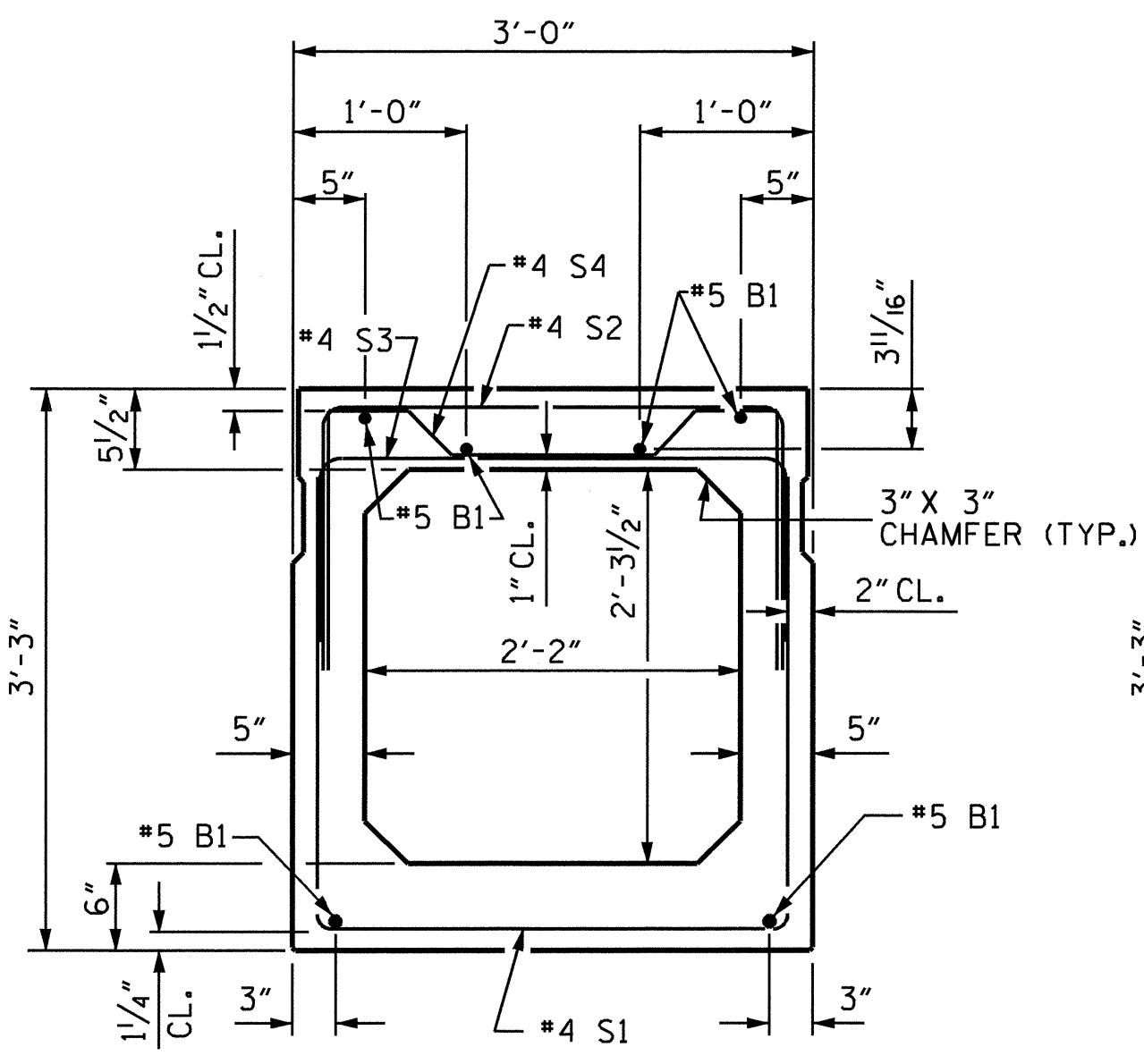
SUPERSTRUCTURE  
 PLAN OF SPAN B

DRAWN BY: S. DOMBROWSKI DATE: 2/5/09  
 CHECKED BY: HARISH SHAH DATE: 5/3/10

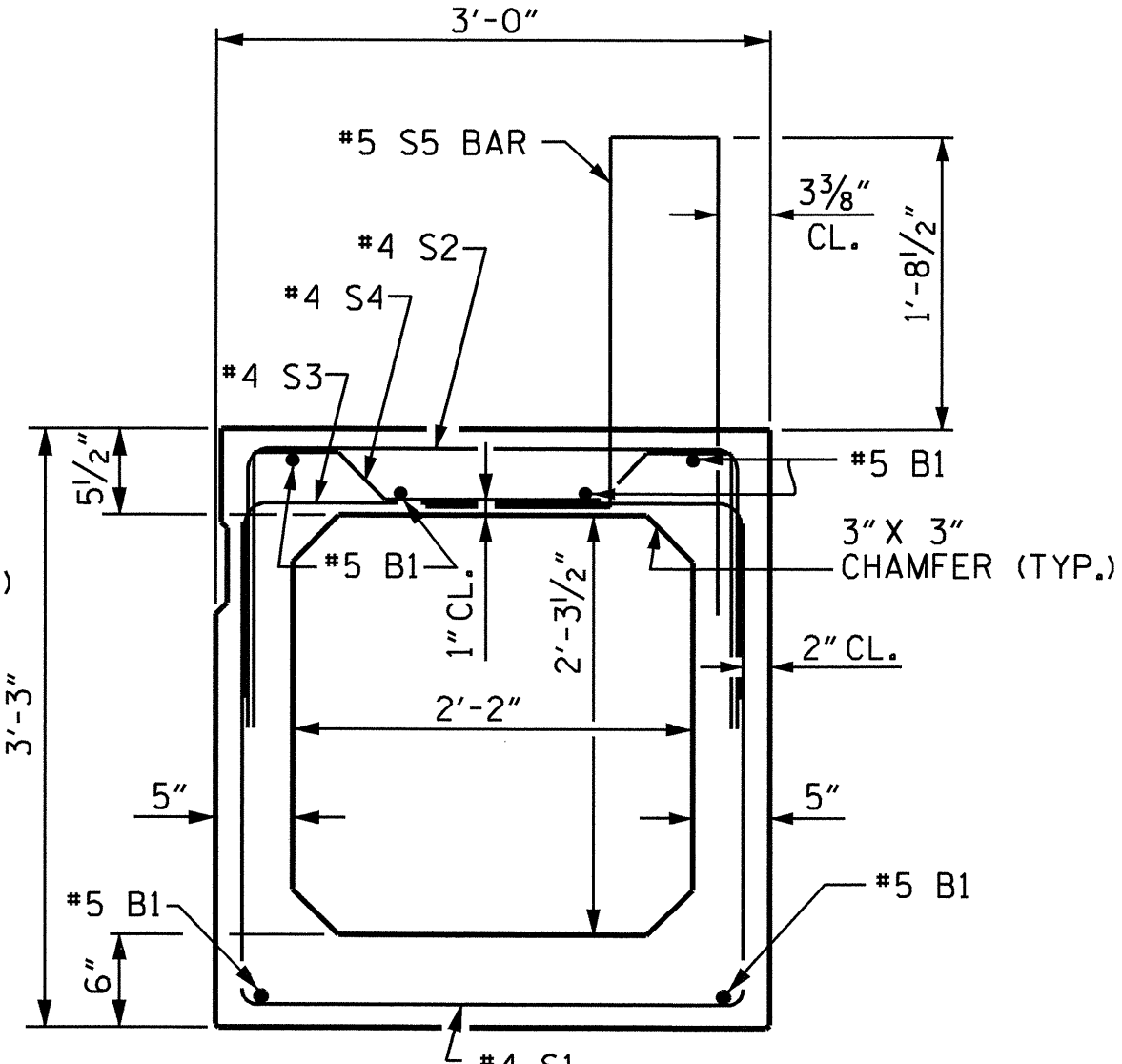
REVISIONS						SHEET NO. S-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			

16-JUN-2011 11:09  
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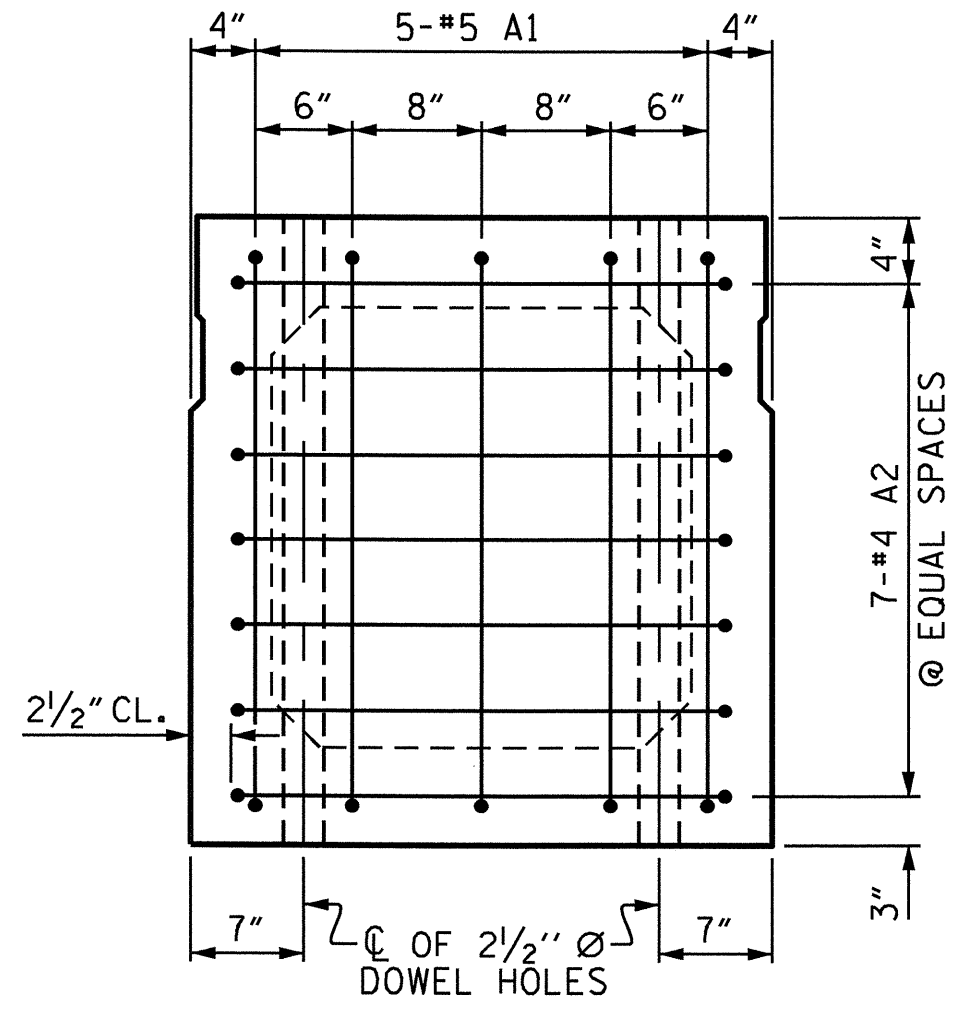




**INTERIOR BOX BEAM SECTION**  
(STRAND LAYOUT NOT SHOWN)

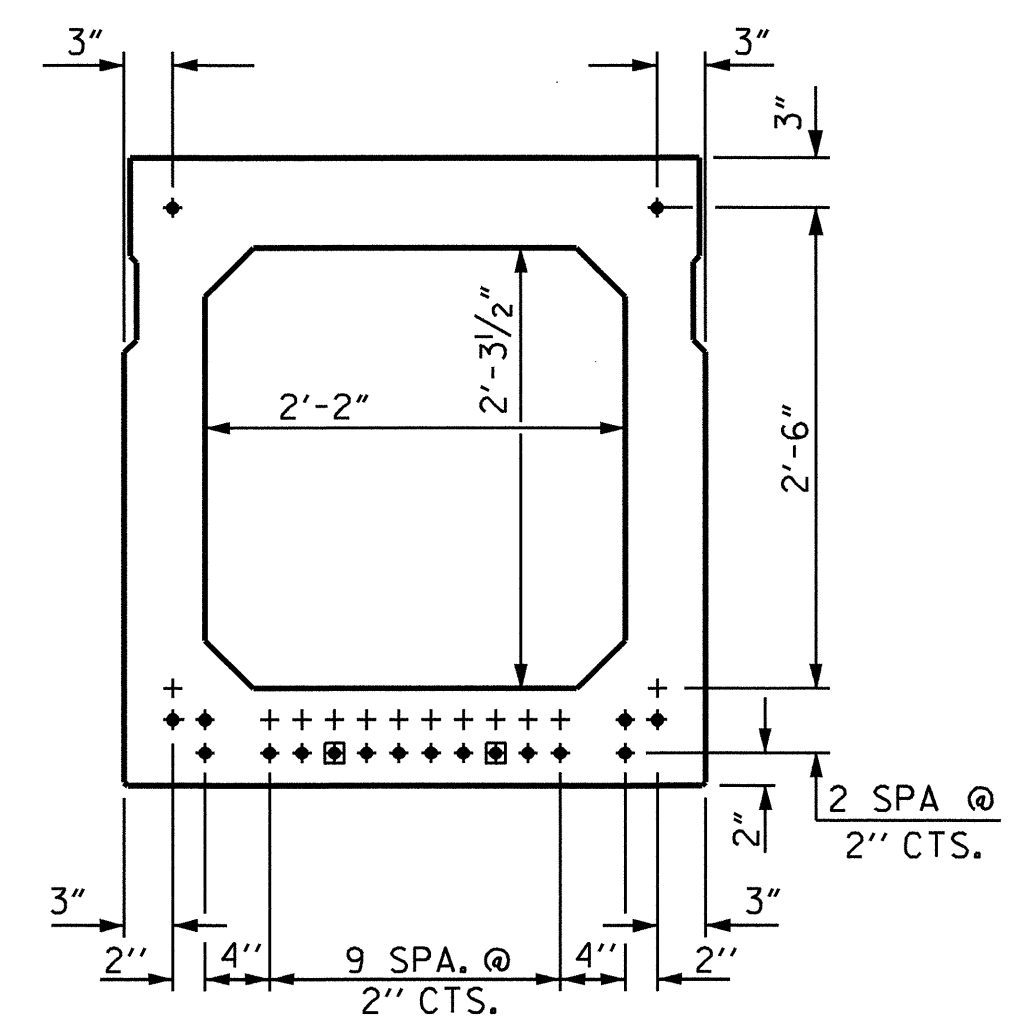


**EXTERIOR BOX BEAM SECTION**  
(STRAND LAYOUT NOT SHOWN)



**END ELEVATION**  
SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES.  
(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)

**0.6" Ø LOW RELAXATION STRAND LAYOUT**



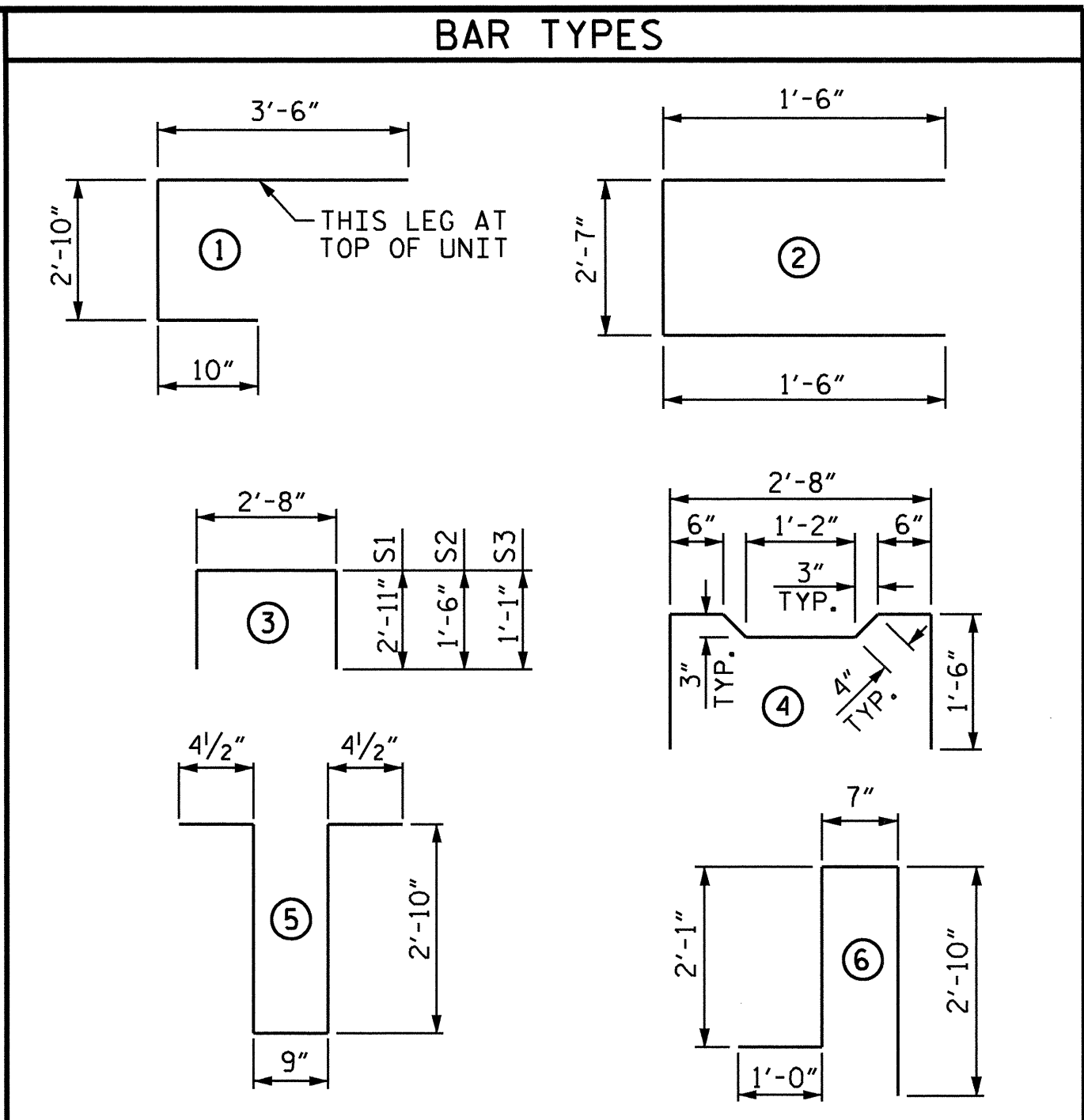
**TYPICAL STRAND LOCATION**  
(18 STRANDS REQUIRED)

(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION)

**DEBONDING LEGEND**

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

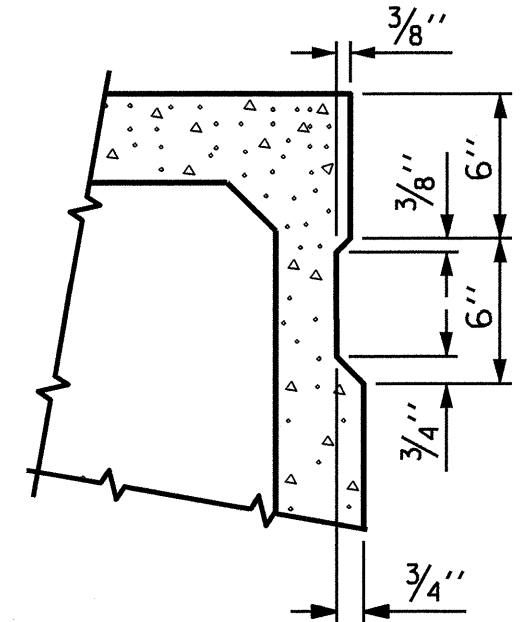
GRADE 270 STRANDS	
AREA ( SQUARE INCHES )	0.217
ULTIMATE STRENGTH ( LBS. PER STRAND )	58,600
APPLIED PRESTRESS ( LBS. PER STRAND )	43,950



ALL BAR DIMENSIONS ARE OUT TO OUT

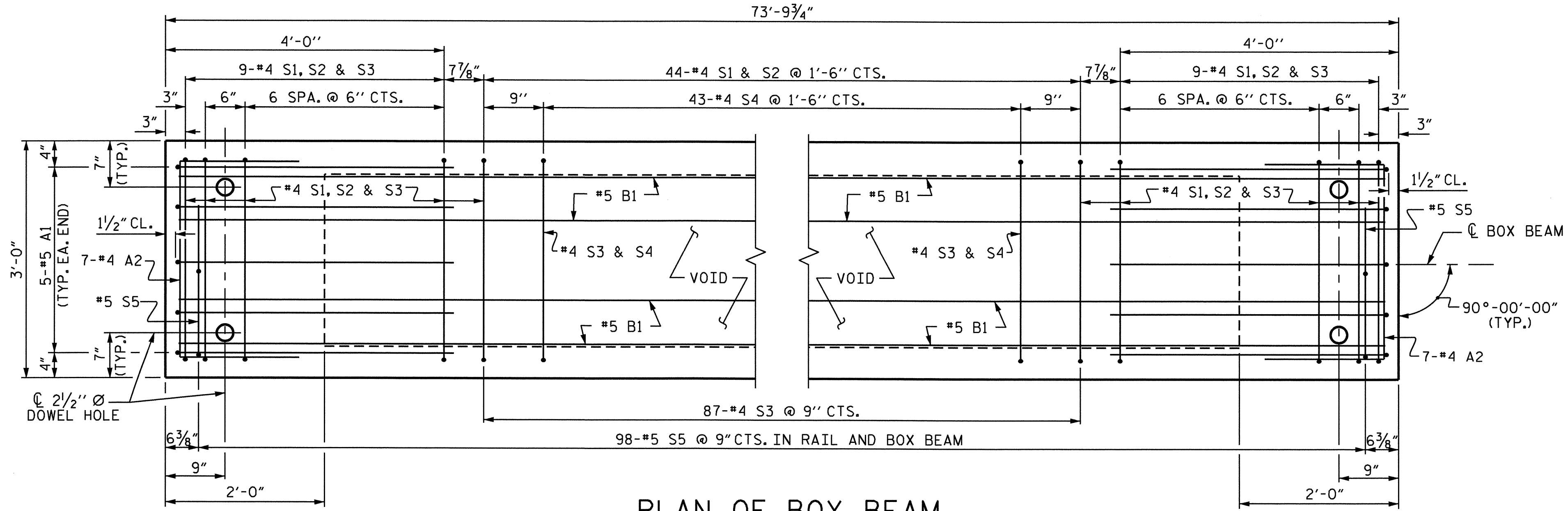
**BILL OF MATERIAL FOR ONE BOX BEAM SECTION**

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
A1	10	#5	1	7'-2"	75	7'-2"	75
A2	38	#4	2	5'-7"	142	5'-7"	142
B1	12	#5	STR	37'-10"	474	37'-10"	474
K1	12	#4	5	7'-2"	57	7'-2"	57
K2	8	#4	STR	2'-7"	14	2'-7"	14
S1	62	#4	3	8'-6"	352	8'-6"	352
S2	62	#4	3	5'-8"	235	5'-8"	235
S3	105	#4	3	4'-10"	339	4'-10"	339
S4	43	#4	4	5'-10"	168	5'-10"	168
* S5	98	#5	6	6'-6"	664	--	--
REINFORCING STEEL				1856 LBS.		1856 LBS.	
* EPOXY COATED REINF. STEEL				664 LBS.			
5500 P.S.I. CONCRETE				14.6 CU. YDS.		14.6 CU. YDS.	
0.6" Ø L.R. STRANDS				No. 18		No. 18	



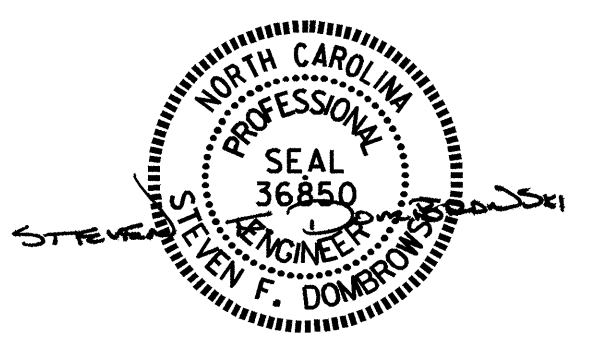
**SHEAR KEY DETAIL**

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.



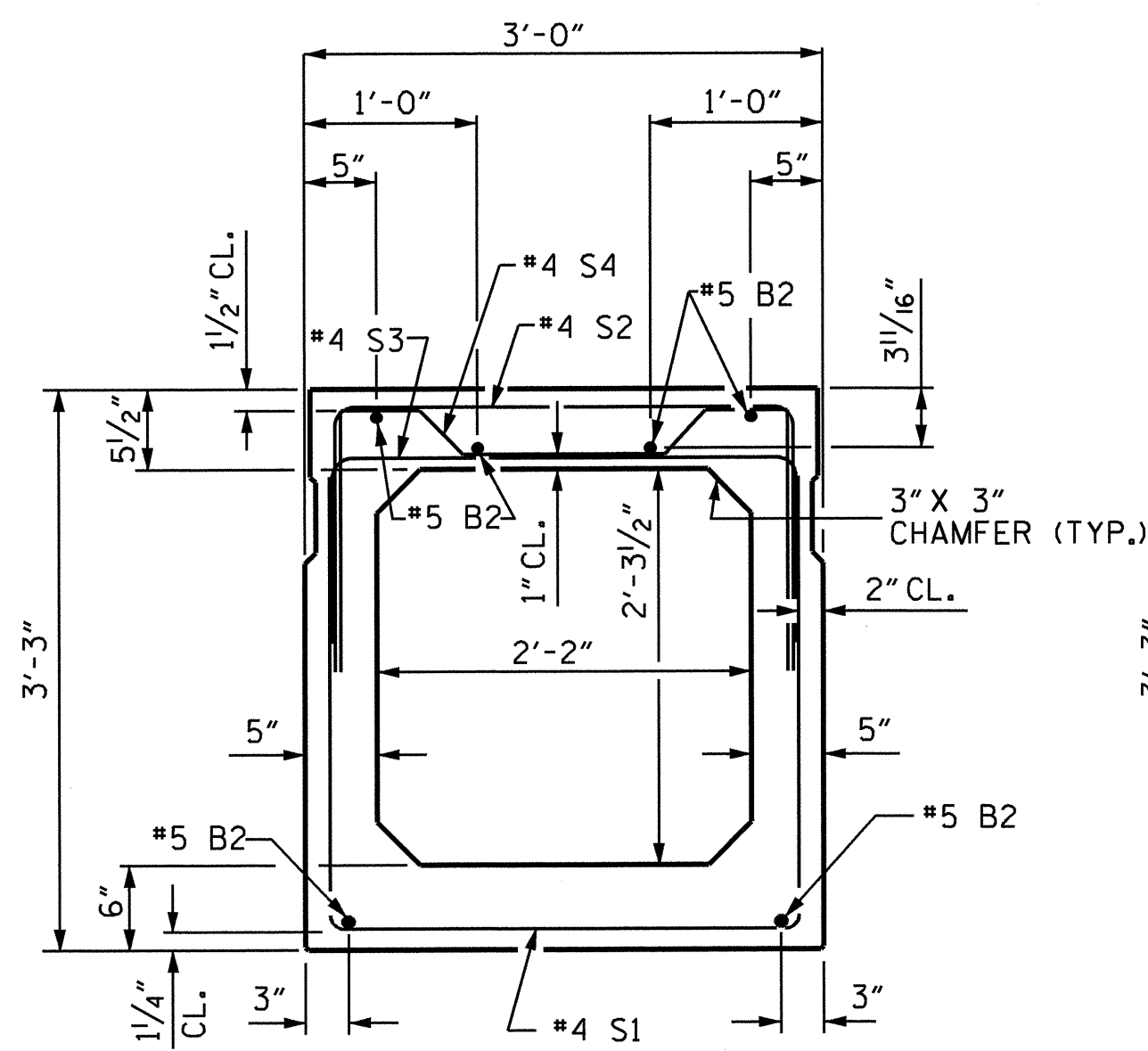
**PLAN OF BOX BEAM**  
EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR.

PROJECT NO. B-4582  
MONTGOMERY COUNTY  
STATION: 17+17.50 -L-  
SHEET 4 OF 6

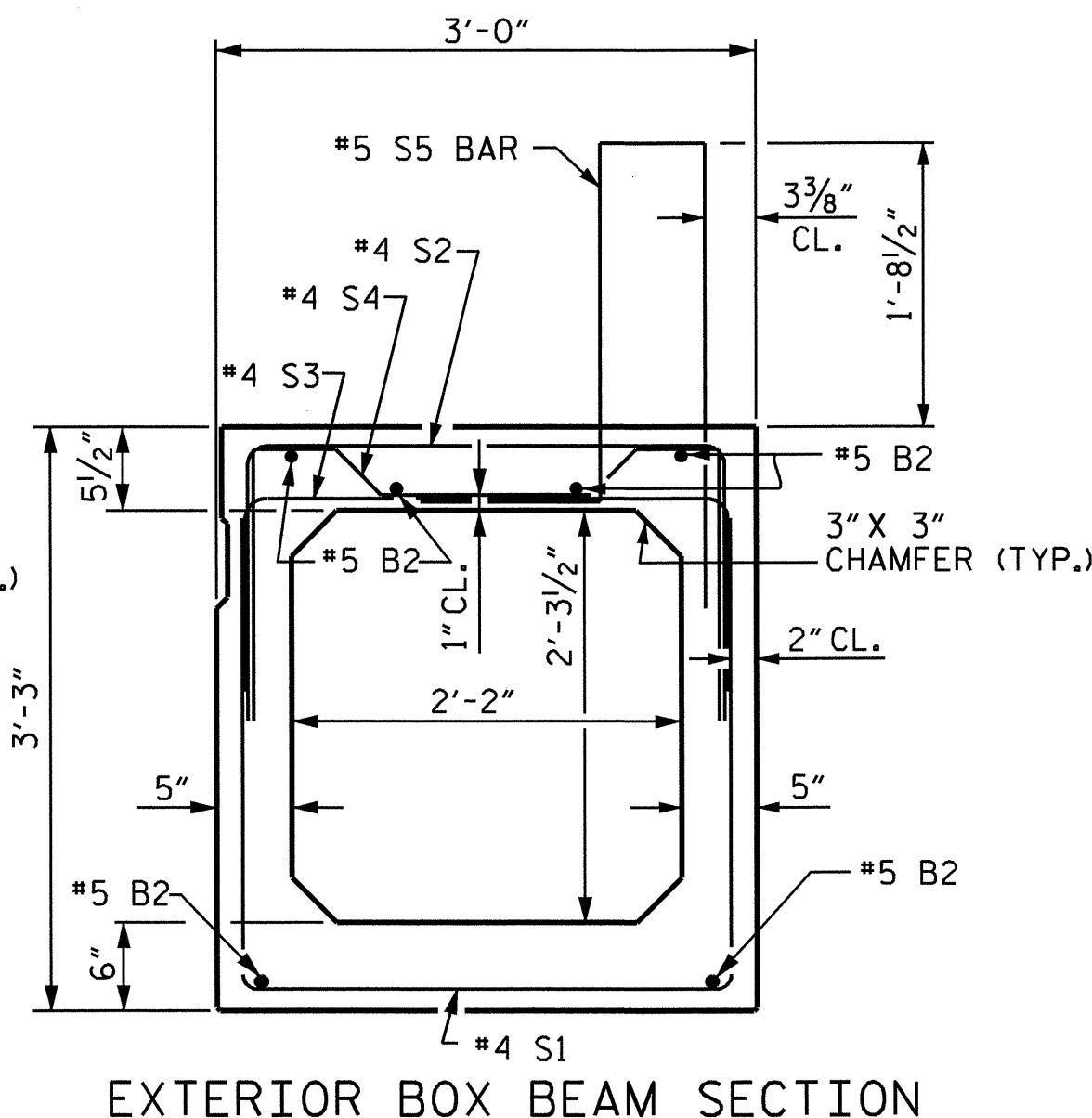


ASSEMBLED BY : S. DOMBROWSKI	DATE : 2/11/09
CHECKED BY : HARISH SHAH	DATE : 5/3/10
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM

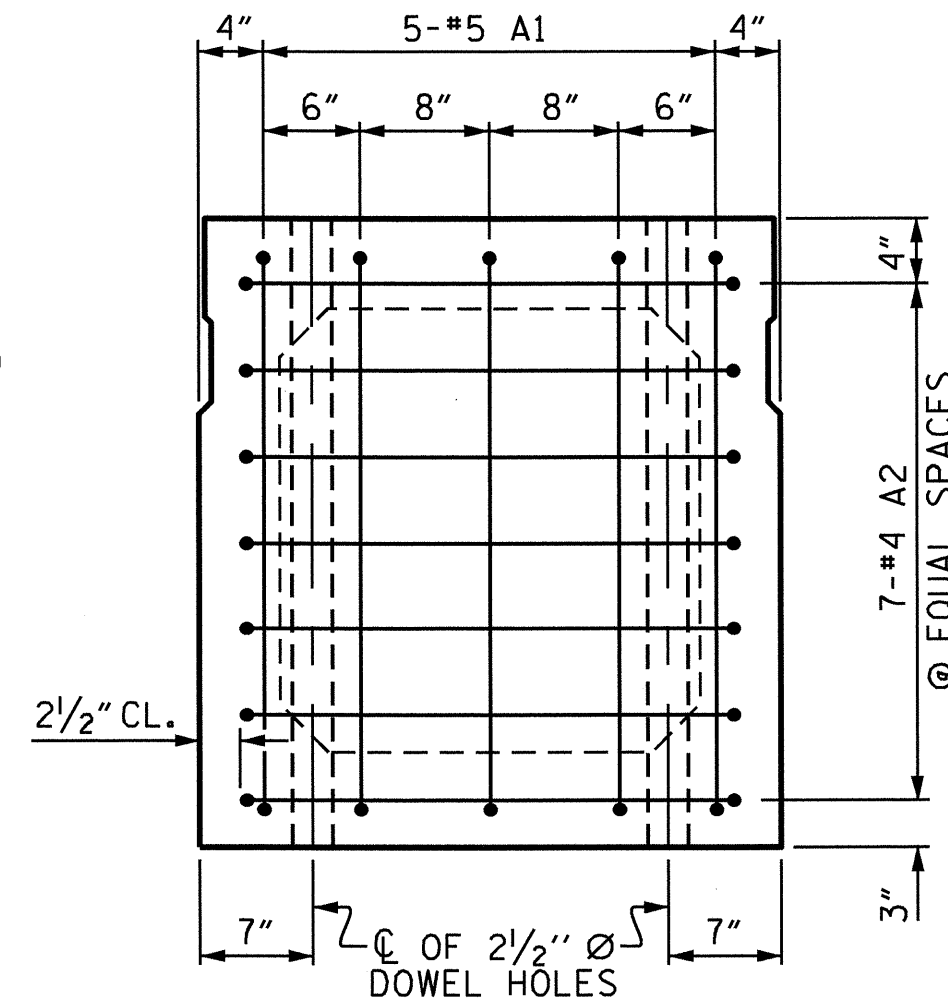
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			22



**INTERIOR BOX BEAM SECTION**  
(STRAND LAYOUT NOT SHOWN)



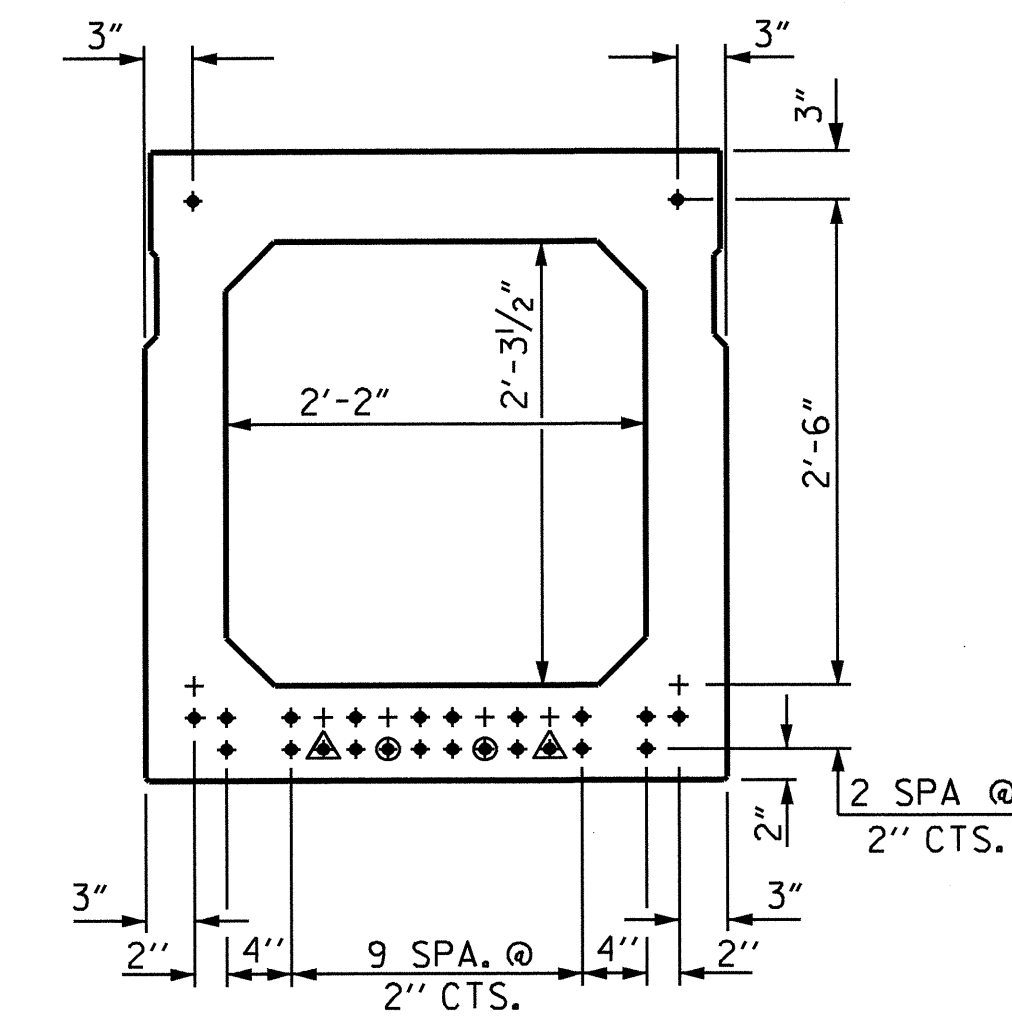
**EXTERIOR BOX BEAM SECTION**  
(STRAND LAYOUT NOT SHOWN)



**END ELEVATION**

SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)

**0.6" Ø LOW RELAXATION STRAND LAYOUT**



**TYPICAL STRAND LOCATION**

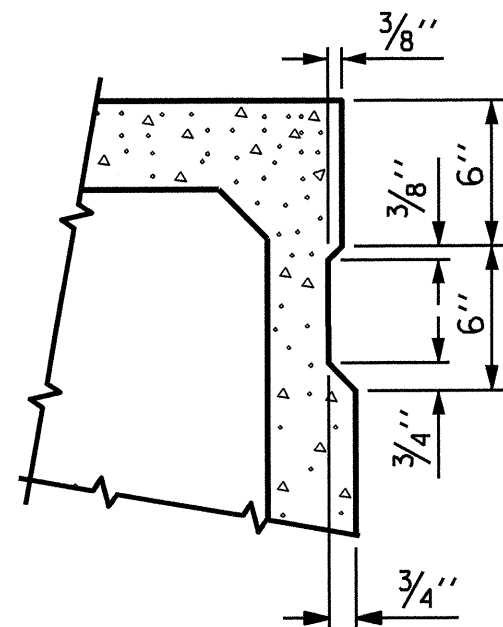
(24 STRANDS REQUIRED)  
(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION)

**DEBONDING LEGEND**

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

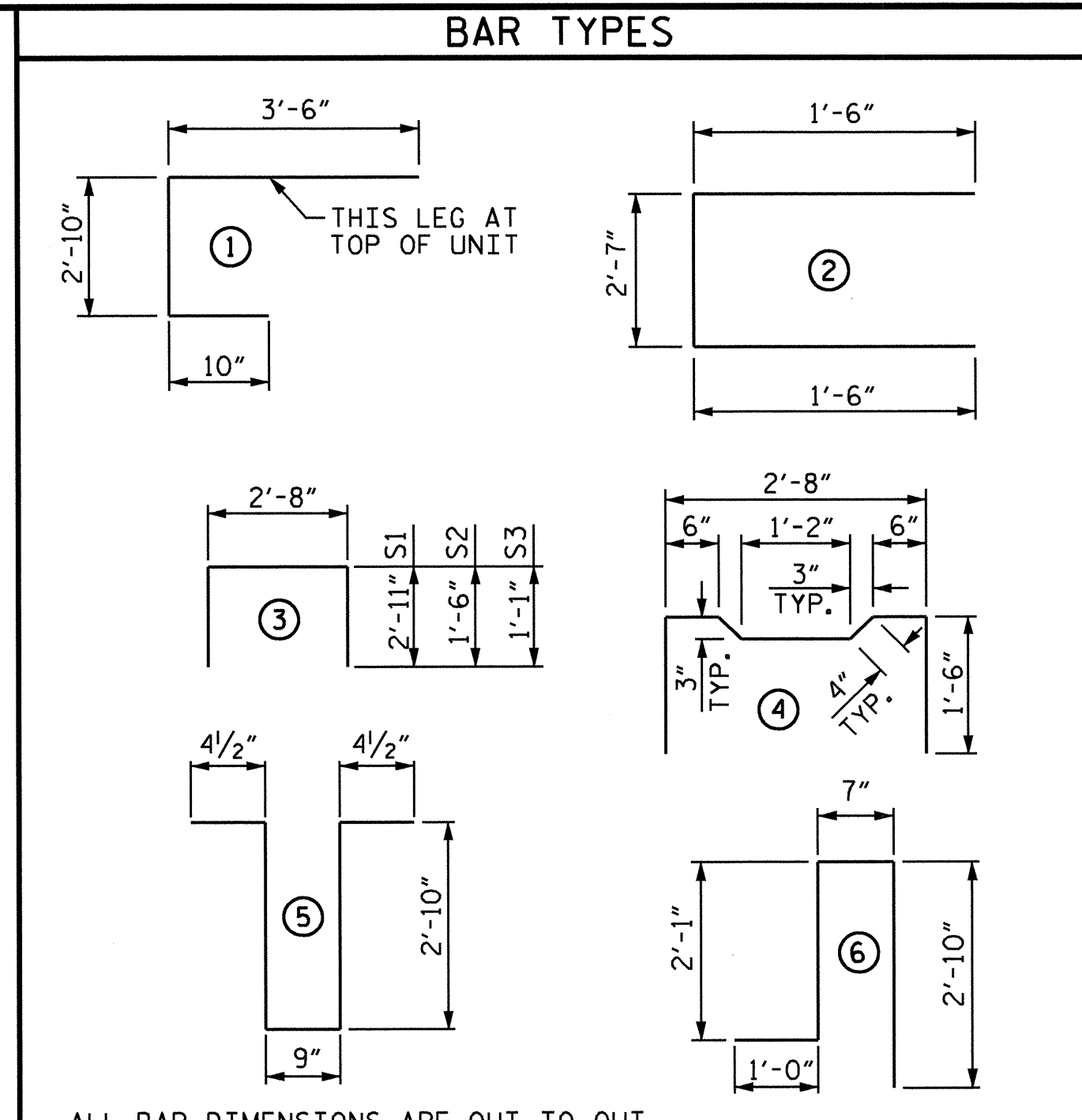
**GRADE 270 STRANDS**

	0.6" Ø L.R.
AREA ( SQUARE INCHES )	0.217
ULTIMATE STRENGTH ( LBS. PER STRAND )	58,600
APPLIED PRESTRESS ( LBS. PER STRAND )	43,950



**SHEAR KEY DETAIL**

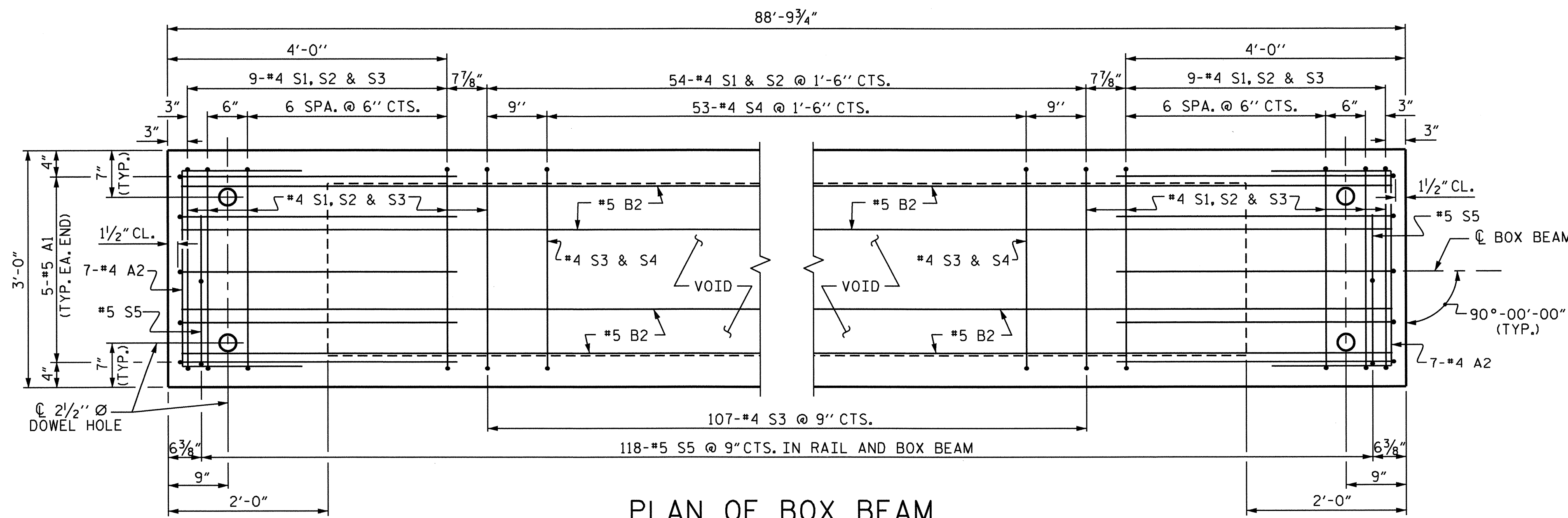
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.



ALL BAR DIMENSIONS ARE OUT TO OUT

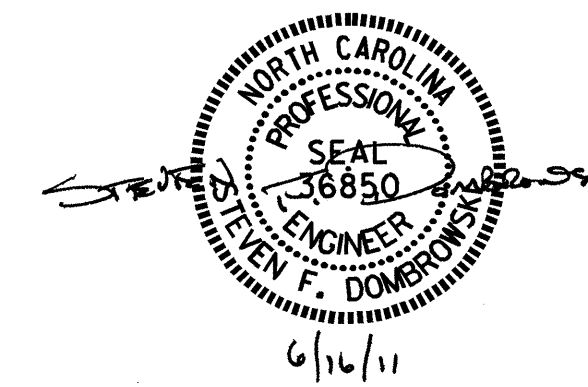
**BILL OF MATERIAL FOR ONE BOX BEAM SECTION**

		EXTERIOR UNIT		INTERIOR UNIT			
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	7'-2"	75	7'-2"	75
A2	44	#4	2	5'-7"	164	5'-7"	164
B2	12	#5	STR	45'-4"	567	45'-4"	567
K1	15	#4	5	7'-2"	72	7'-2"	72
K2	10	#4	STR	2'-7"	17	2'-7"	17
S1	72	#4	3	8'-6"	409	8'-6"	409
S2	72	#4	3	5'-8"	273	5'-8"	273
S3	125	#4	3	4'-10"	404	4'-10"	404
S4	53	#4	4	5'-10"	207	5'-10"	207
*S5	118	#5	6	6'-6"	800	--	--
REINFORCING STEEL				2188 LBS.		2188 LBS.	
* EPOXY COATED REINF. STEEL				800 LBS.			
5500 P.S.I. CONCRETE				17.4 CU. YDS.		17.4 CU. YDS.	
0.6" Ø L.R. STRANDS				No. 24		No. 24	



**PLAN OF BOX BEAM**

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPANS. FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS.



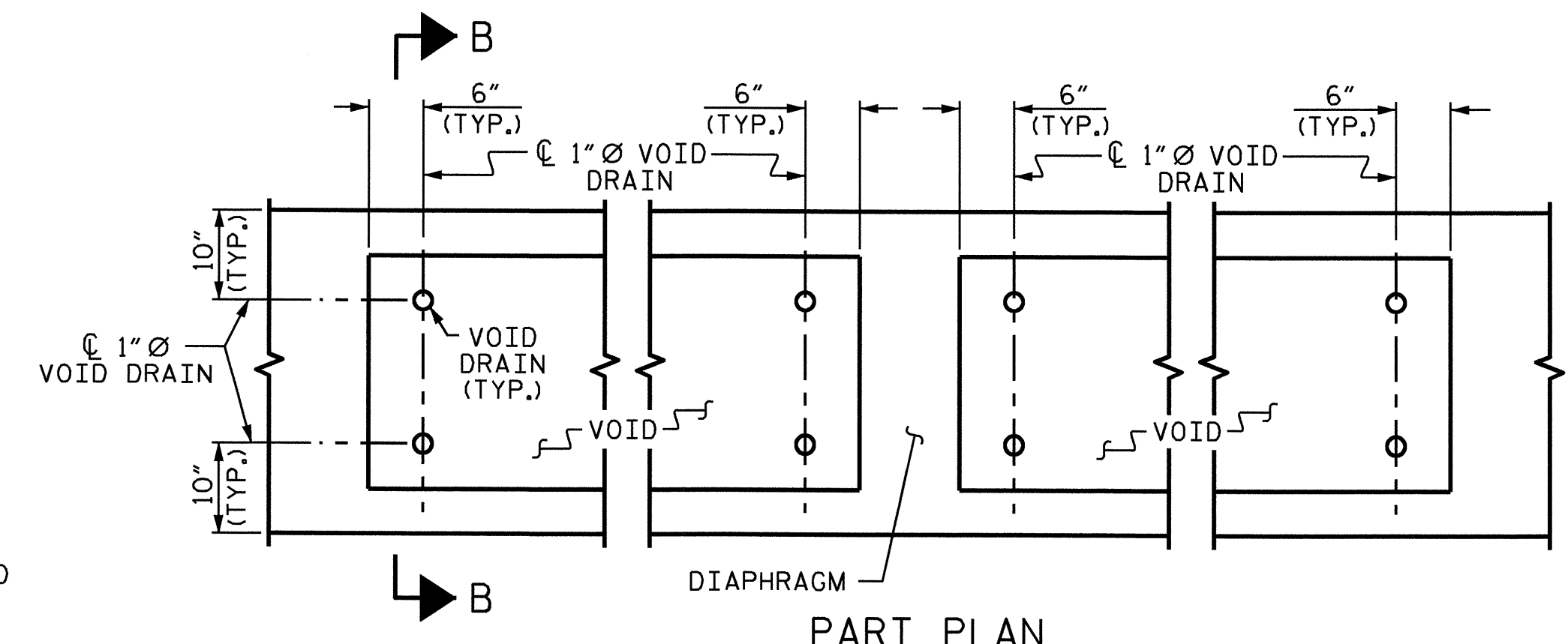
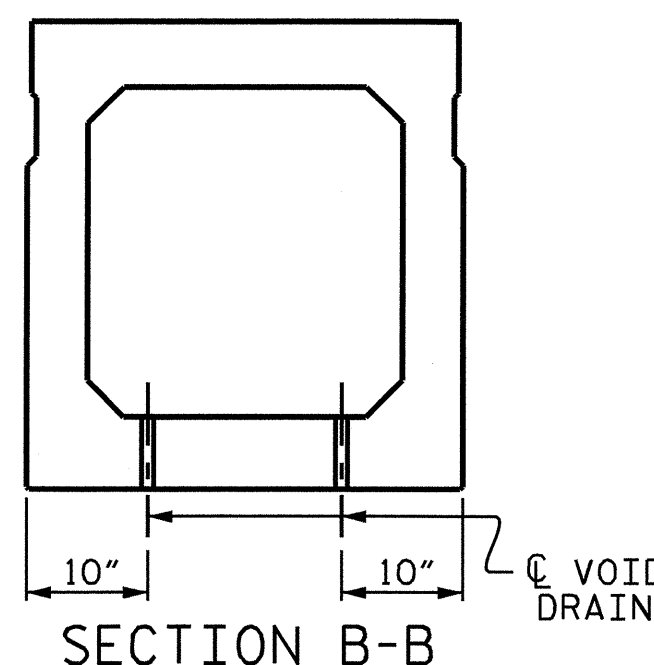
PROJECT NO. B-4582  
MONTGOMERY COUNTY  
STATION: 17+17.50 -L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
3'-0" X 3'-3"  
PRESTRESSED CONCRETE  
BOX BEAM UNIT  
SPAN B

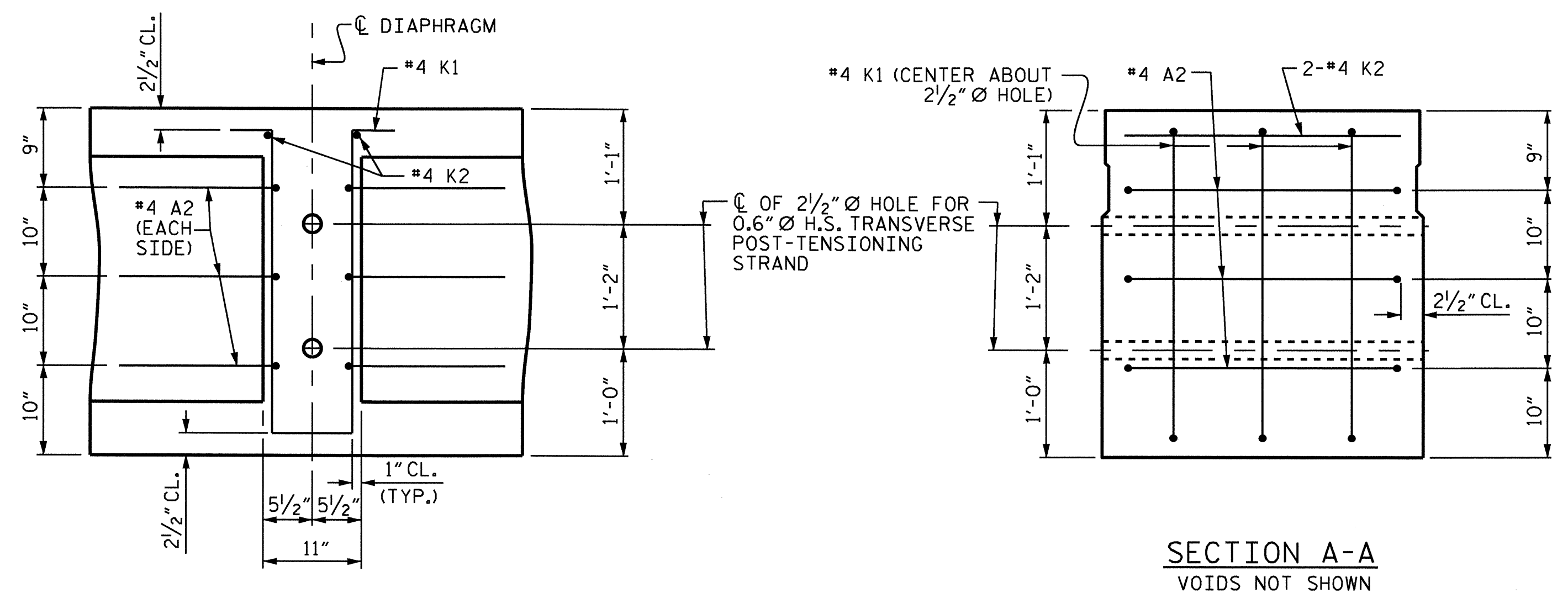
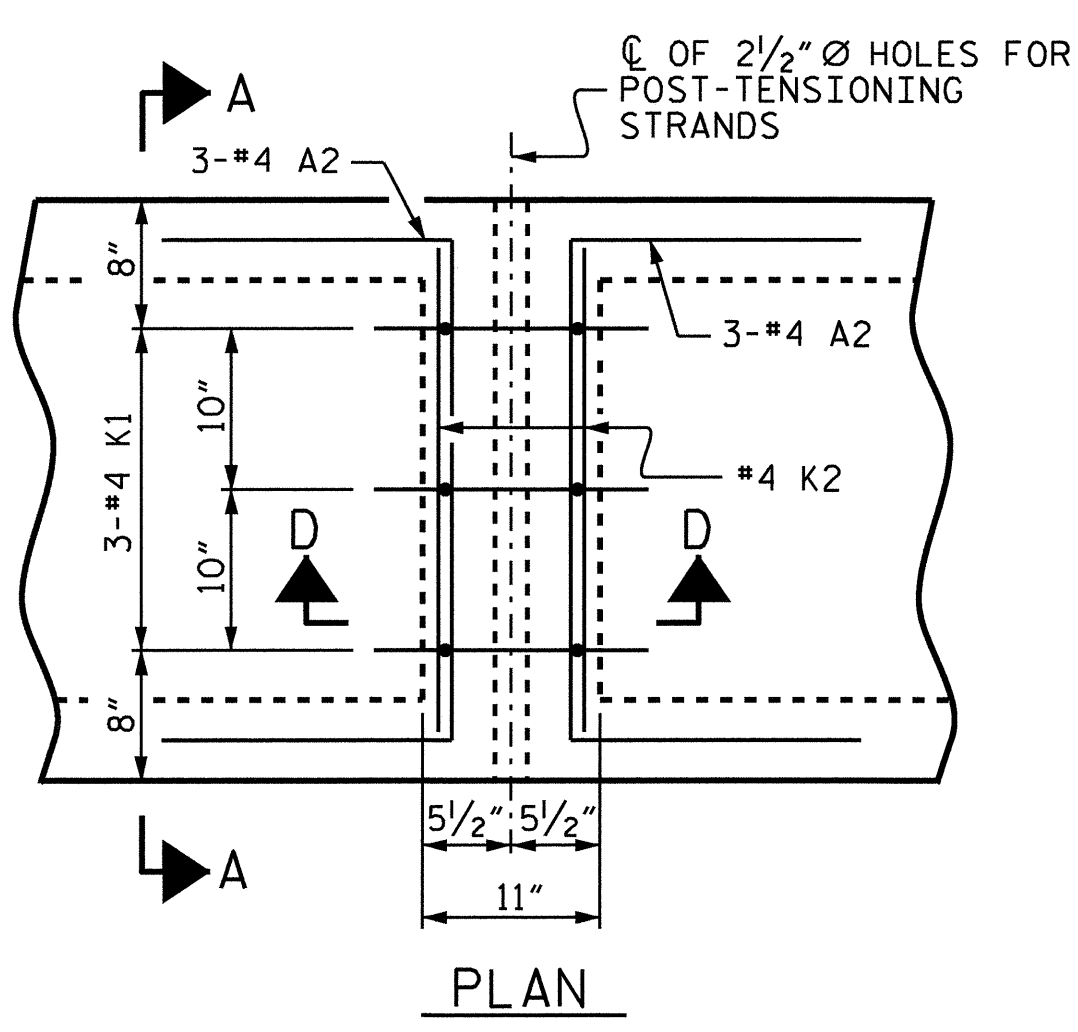
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			22

ASSEMBLED BY : S. DOMBROWSKI	DATE : 2/11/09
CHECKED BY : HARISH SHAH	DATE : 5/3/10
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM



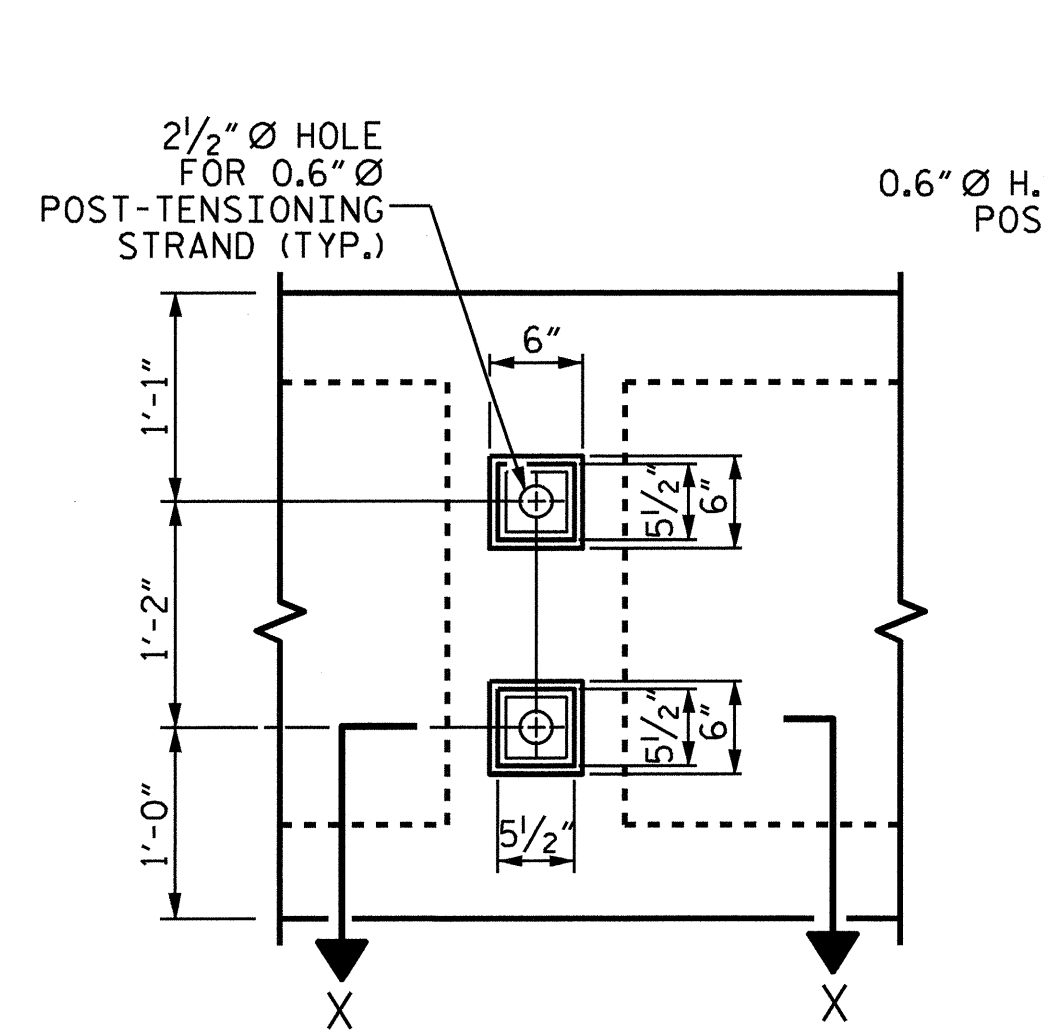
**VOID DRAIN DETAILS**

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

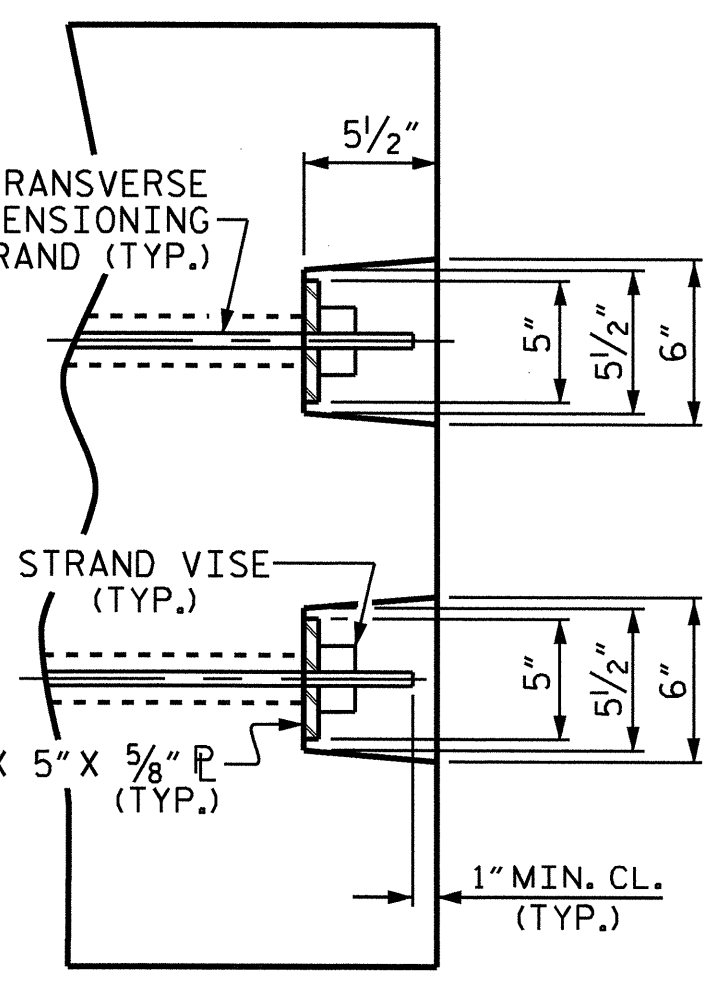


**DOUBLE DIAPHRAGM DETAILS**

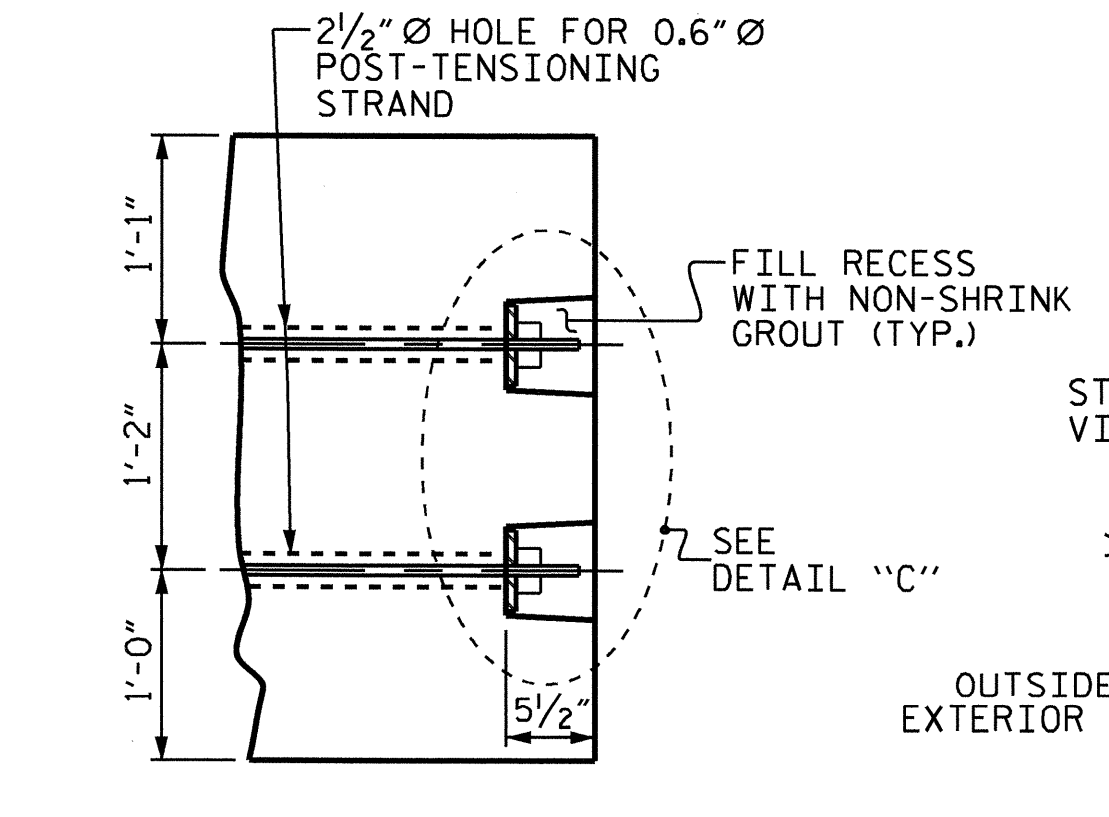
#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2 1/2" Ø HOLE



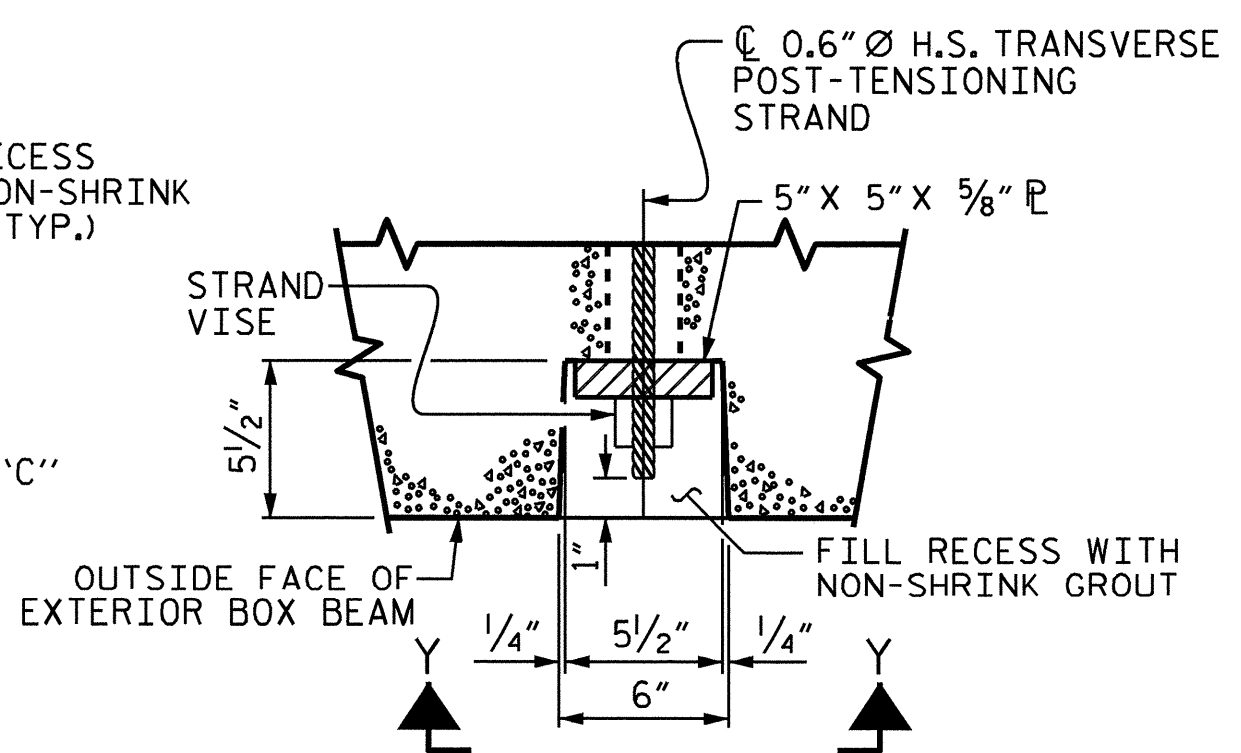
**VIEW Y-Y**  
SHOWING ELEVATION VIEW OF GROUTED RECESS



**DETAIL "C"**



**PART SECTION AT RECESS**

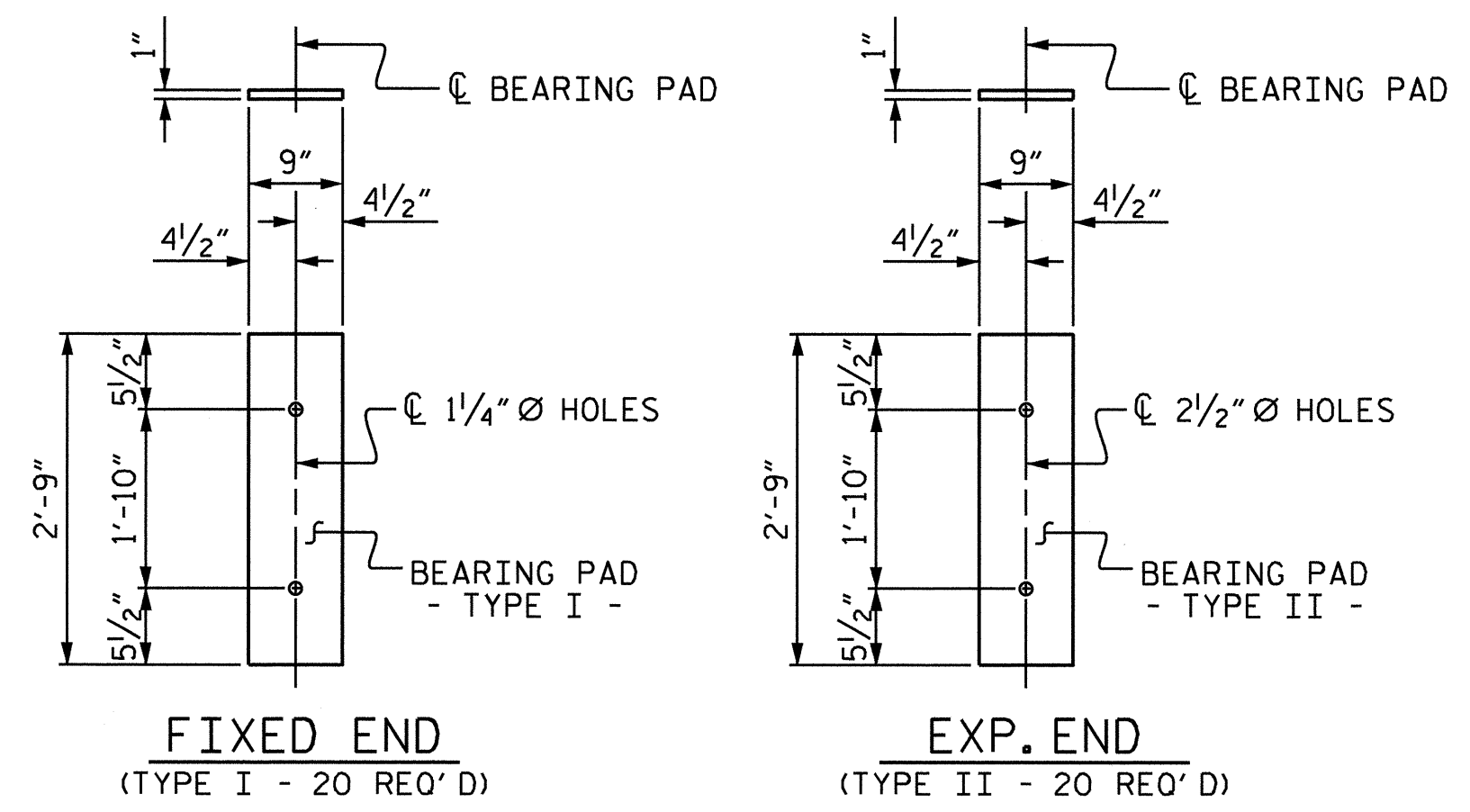


**SECTION X-X**

**GROUTED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM**

DEAD LOAD DEFLECTION AND CAMBER		
	3'-0" x 3'-3" BOX BEAM 0.6" Ø L.R. STRAND	
	SPAN A	SPAN B
CAMBER (BEAM ALONE IN PLACE)	↑ 1 3/4"	↑ 3 3/16"
DEFLECTION DUE TO CONCRETE WEARING SURFACE	↓ 3/8"	↓ 1 3/16"
FINAL CAMBER	↑ 1 3/8"	↑ 2 3/8"

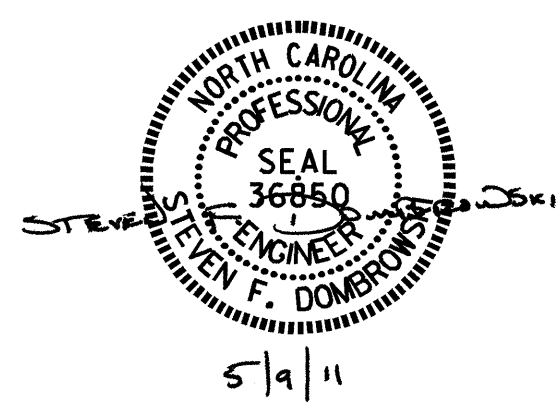
BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
<b>SPAN A</b>			
EXTERIOR	2	73'-9 3/4"	147.625'
INTERIOR	8	73'-9 3/4"	590.50'
<b>SPAN B</b>			
EXTERIOR	2	88'-9 3/4"	177.625'
INTERIOR	8	88'-9 3/4"	710.50'
<b>TOTAL</b>	<b>20</b>		<b>1626.25'</b>



**ELASTOMERIC BEARING DETAILS**

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS

PROJECT NO. B-4582  
MONTGOMERY COUNTY  
 STATION: 17+17.50 -L-  
 SHEET 6 OF 6



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 3'-0" X 3'-3"  
 PRESTRESSED CONCRETE  
 BOX BEAM UNIT

ASSEMBLED BY : S. DOMBROWSKI	DATE : 2/12/09
CHECKED BY : HARISH SHAH	DATE : 5/3/10
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO. S-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			

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 khcompton

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

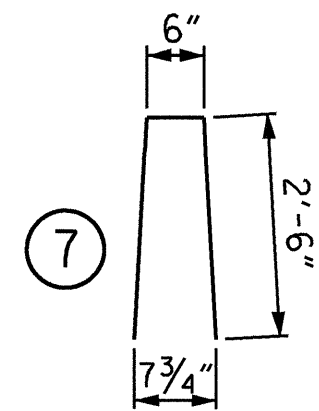
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

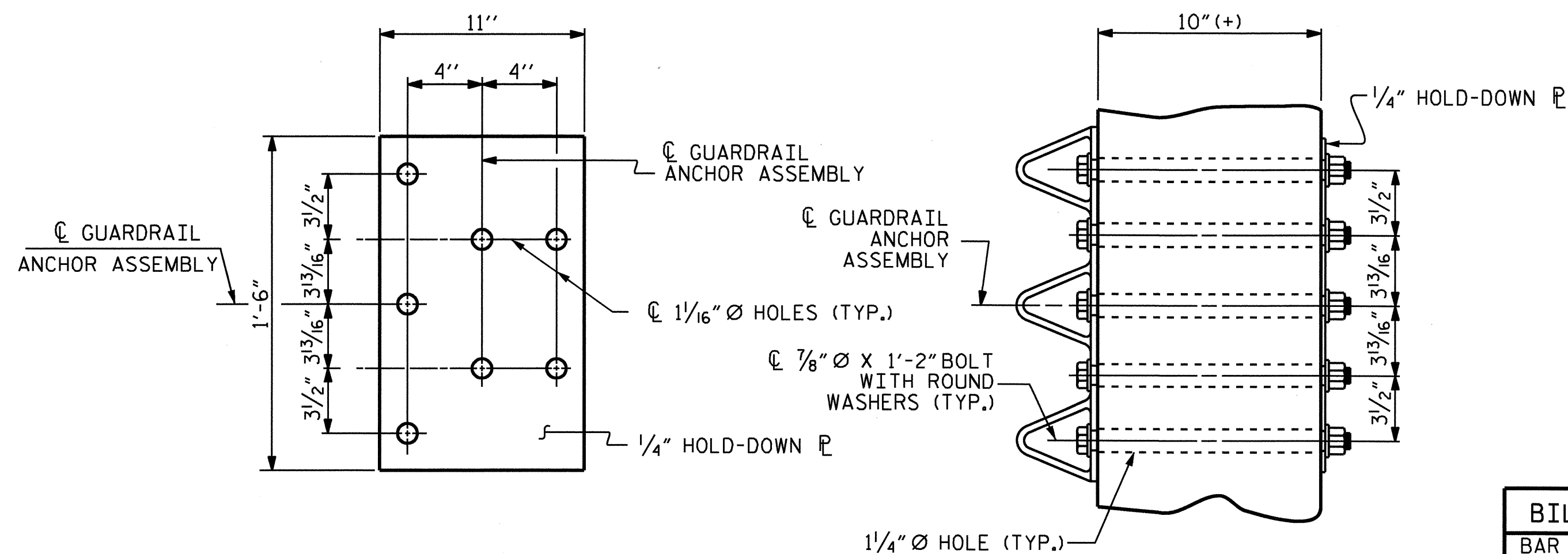
FOR VERTICAL CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.

BAR TYPE

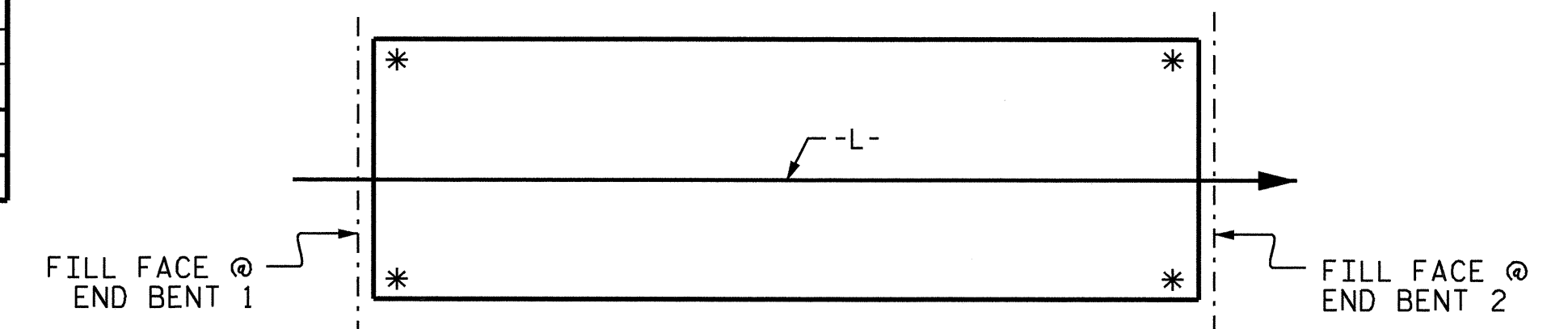


BAR DIMENSIONS ARE OUT TO OUT

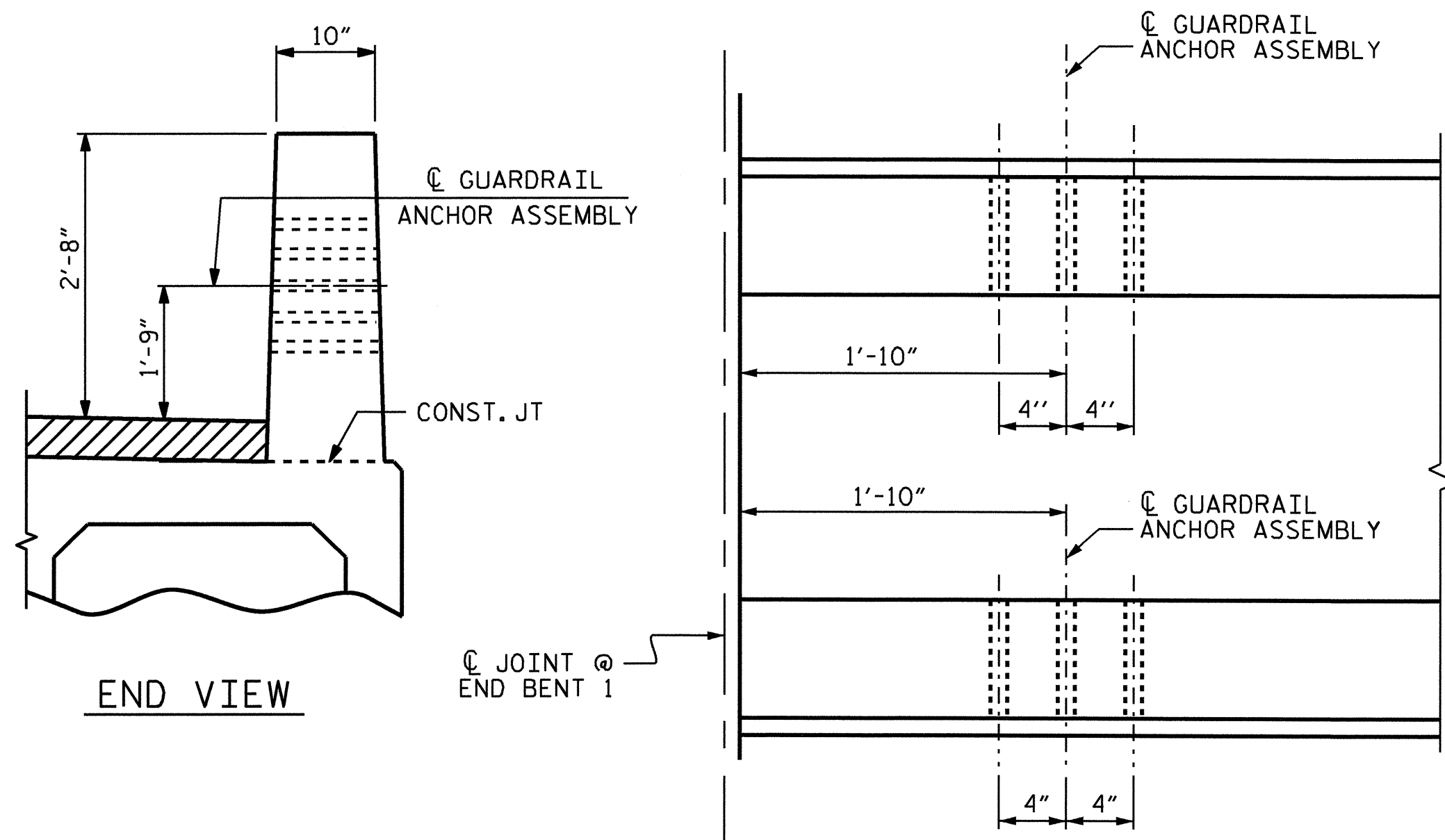
BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL							
BAR	BARS PER SPAN		TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	SPAN A	SPAN B					
*B3	60		60	#5	STR	24'-3"	1518
*B4		60	60	#5	STR	29'-3"	1830
*S6	196	236	432	#5	7	5'-6"	2478
* EPOXY COATED REINFORCING STEEL						5826 LBS.	
CLASS AA CONCRETE						34.5 CU. YDS.	
TOTAL LIN. FT. OF VERTICAL CONCRETE BARRIER RAIL						325.50 LIN. FT.	



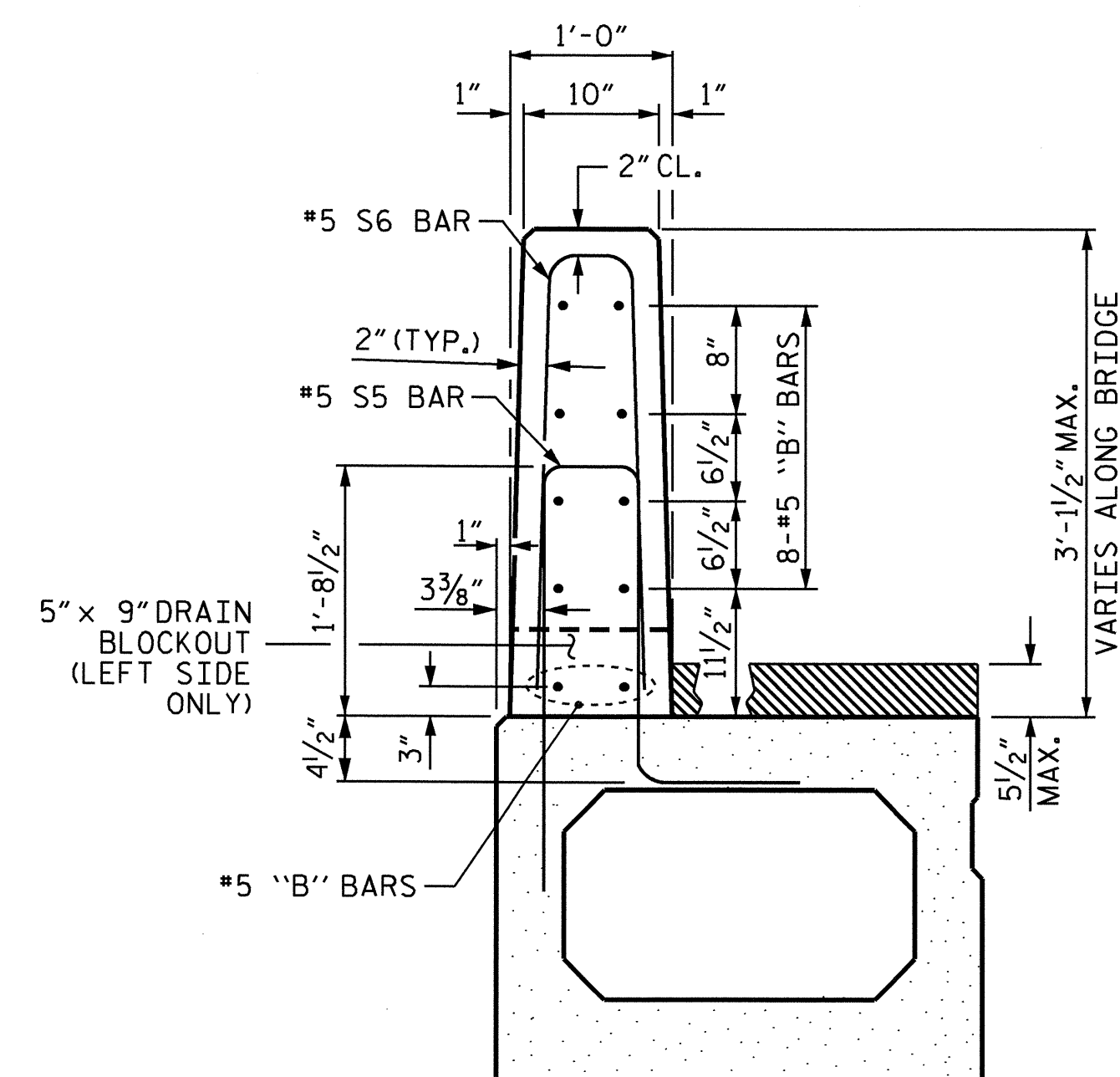
PLAN  
END VIEW  
GUARDRAIL ANCHOR ASSEMBLY DETAILS



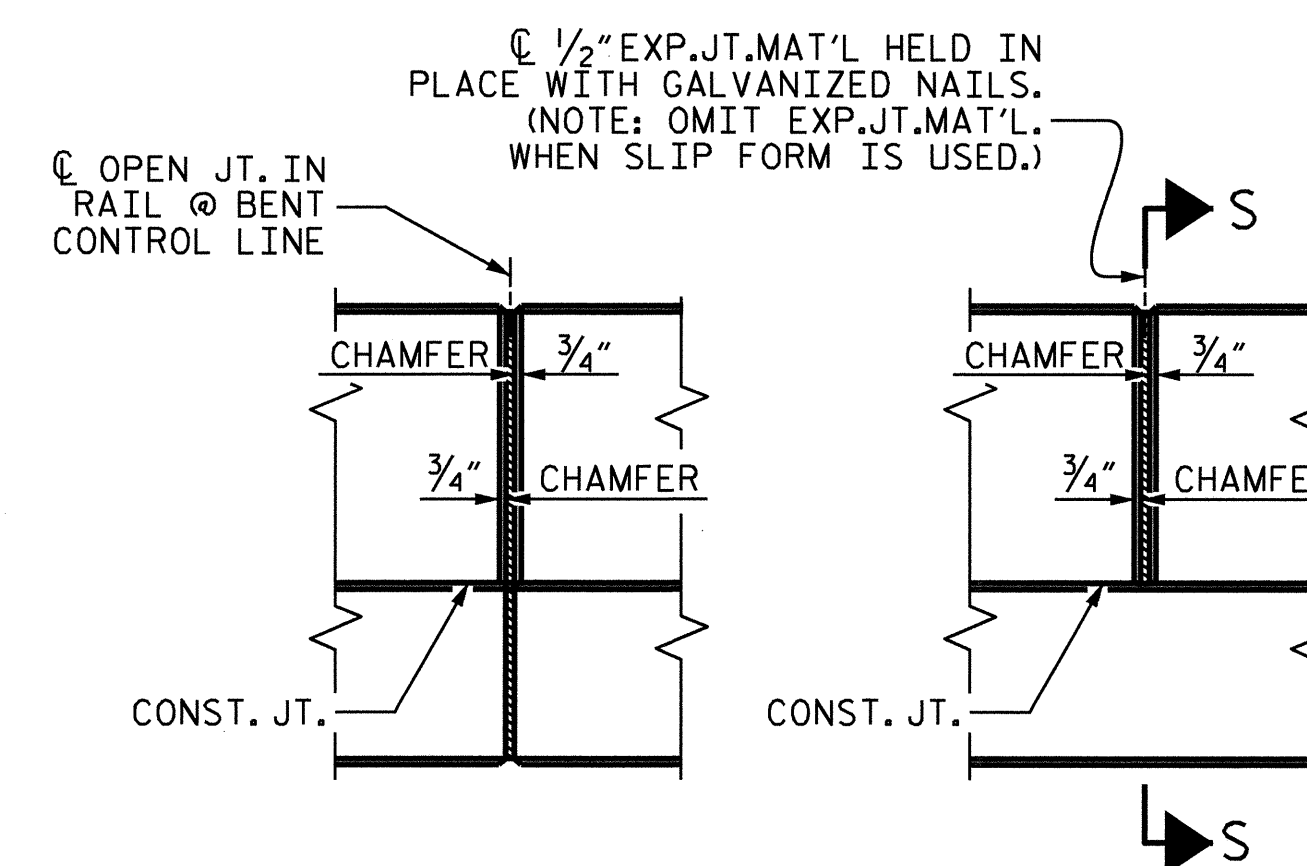
SKETCH SHOWING POINTS OF ATTACHMENT  
\* LOCATION OF GUARDRAIL ATTACHMENT



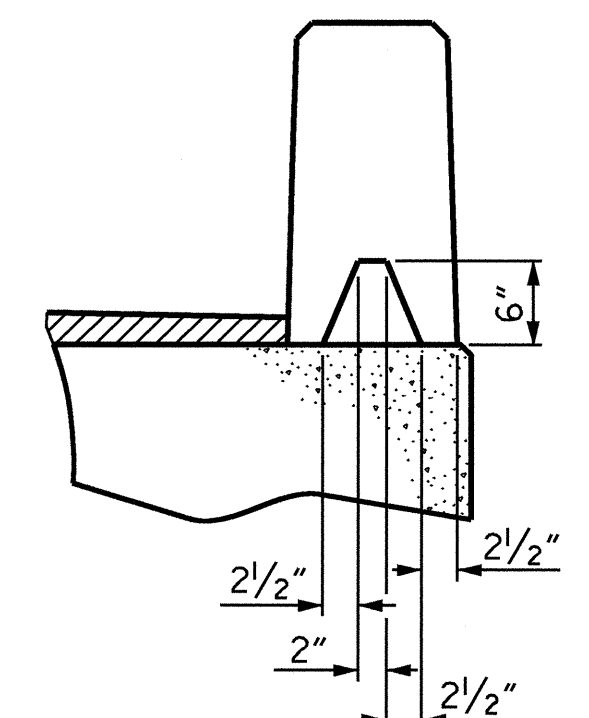
LOCATION OF GUARDRAIL ANCHOR  
END BENT 1 SHOWN, END BENT 2 SIMILAR.



SECTION THRU RAIL  
SHOWN AT BEARING

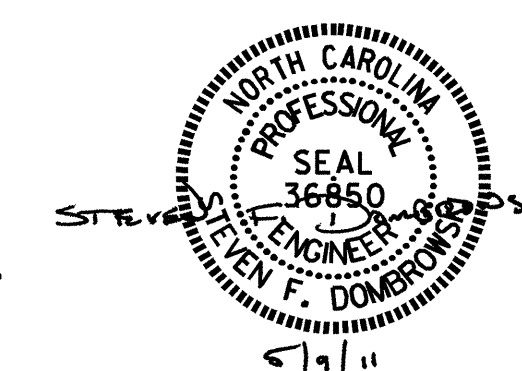


ELEVATION AT EXPANSION JOINTS



SECTION S-S  
AT DAM IN OPEN JOINT  
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

PROJECT NO. B-4582  
MONTGOMERY COUNTY  
STATION: 17+17.50 -L-



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
VERTICAL CONCRETE  
BARRIER RAIL  
AND  
GUARDRAIL ANCHORAGE  
DETAILS

ASSEMBLED BY : HARISH SHAH DATE : 5-04-10  
CHECKED BY : S. DOMBROWSKI DATE : 5-04-10  
DRAWN BY : TLA 5/05  
CHECKED BY : GM 6/05

ADDED 7/11/05R  
REV. 5/1/06R TLA/GM

REVISIONS						SHEET NO. S-11
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			

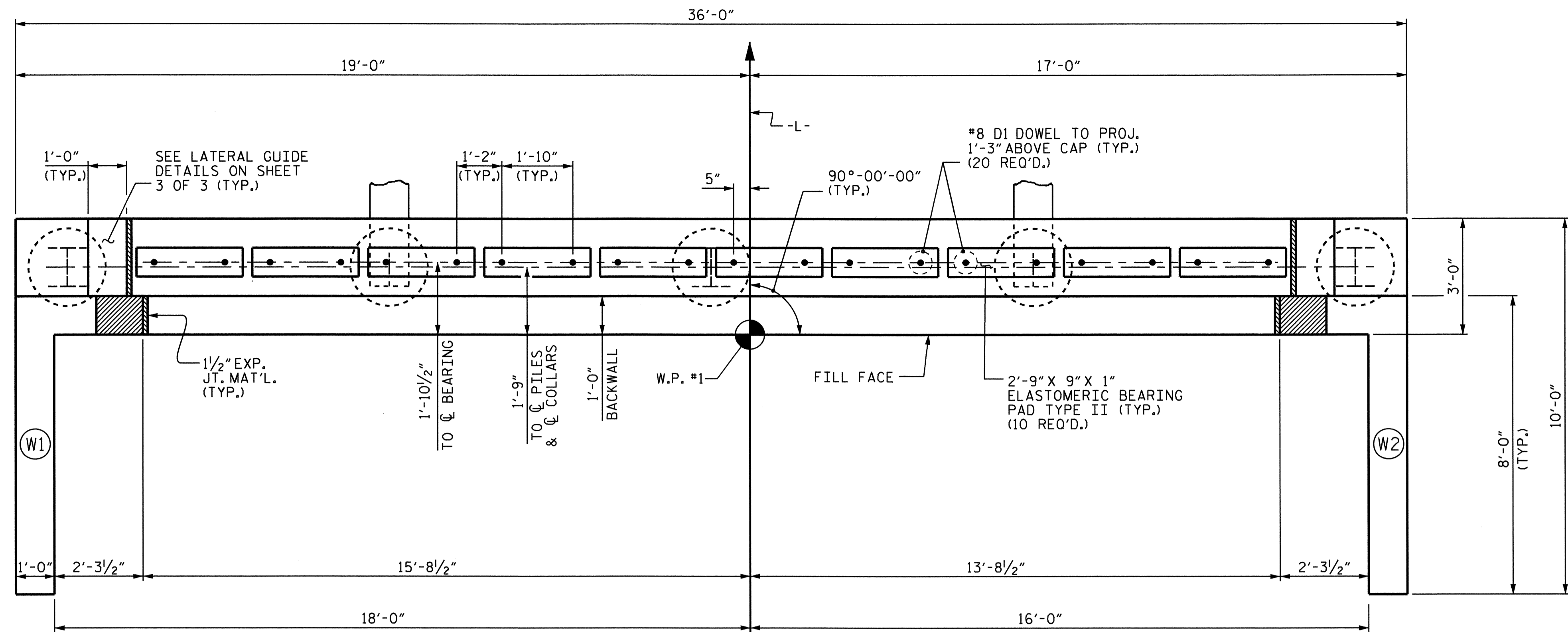
**NOTES**

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

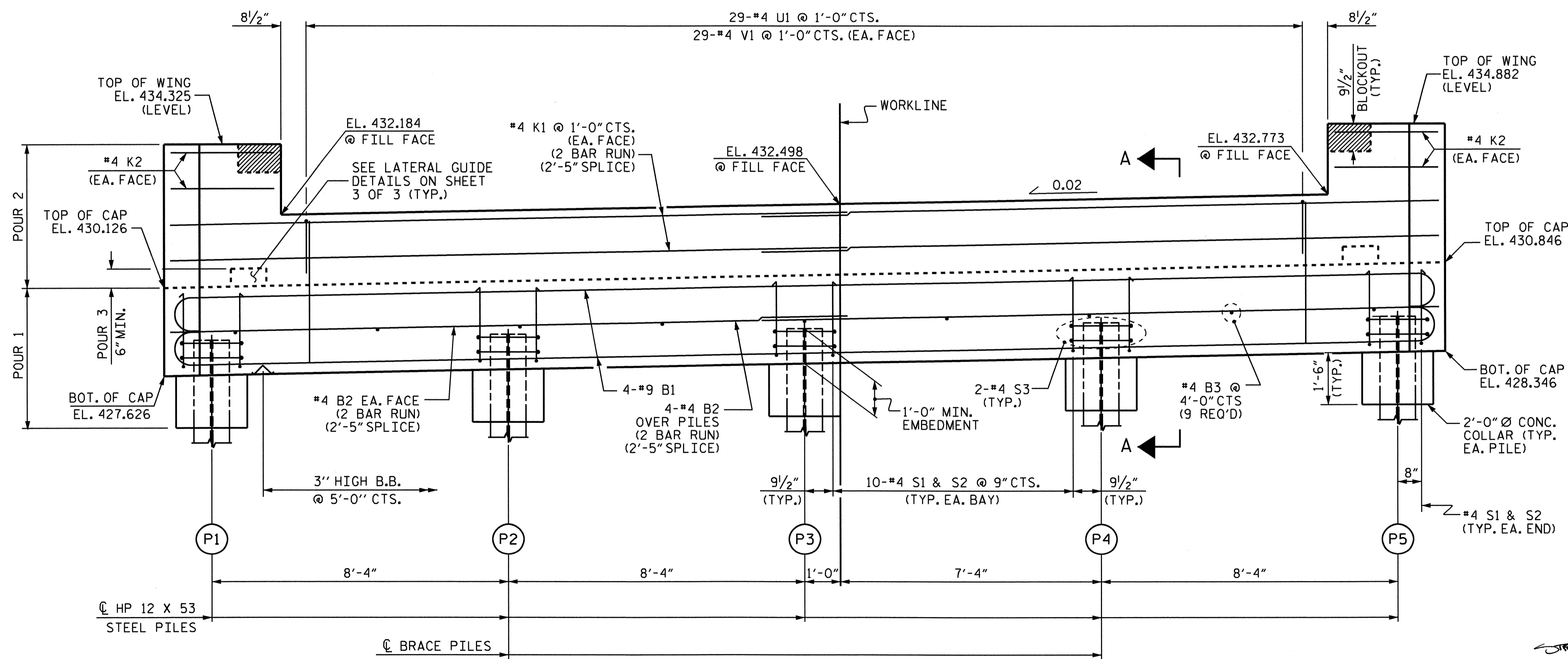
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER PRESTRESSED BOX BEAMS ARE IN PLACE.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.

THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.



**PLAN**



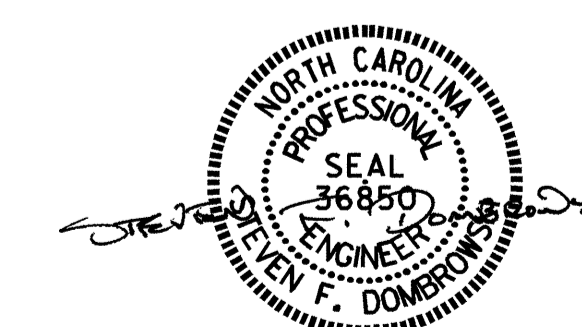
**ELEVATION**

TOP OF PILE ELEVATIONS	
(P1)	428.653
(P2)	428.819
(P3)	428.986
(P4)	429.153
(P5)	429.319

PROJECT NO. B-4582  
MONTGOMERY COUNTY  
 STATION: 17+17.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 1

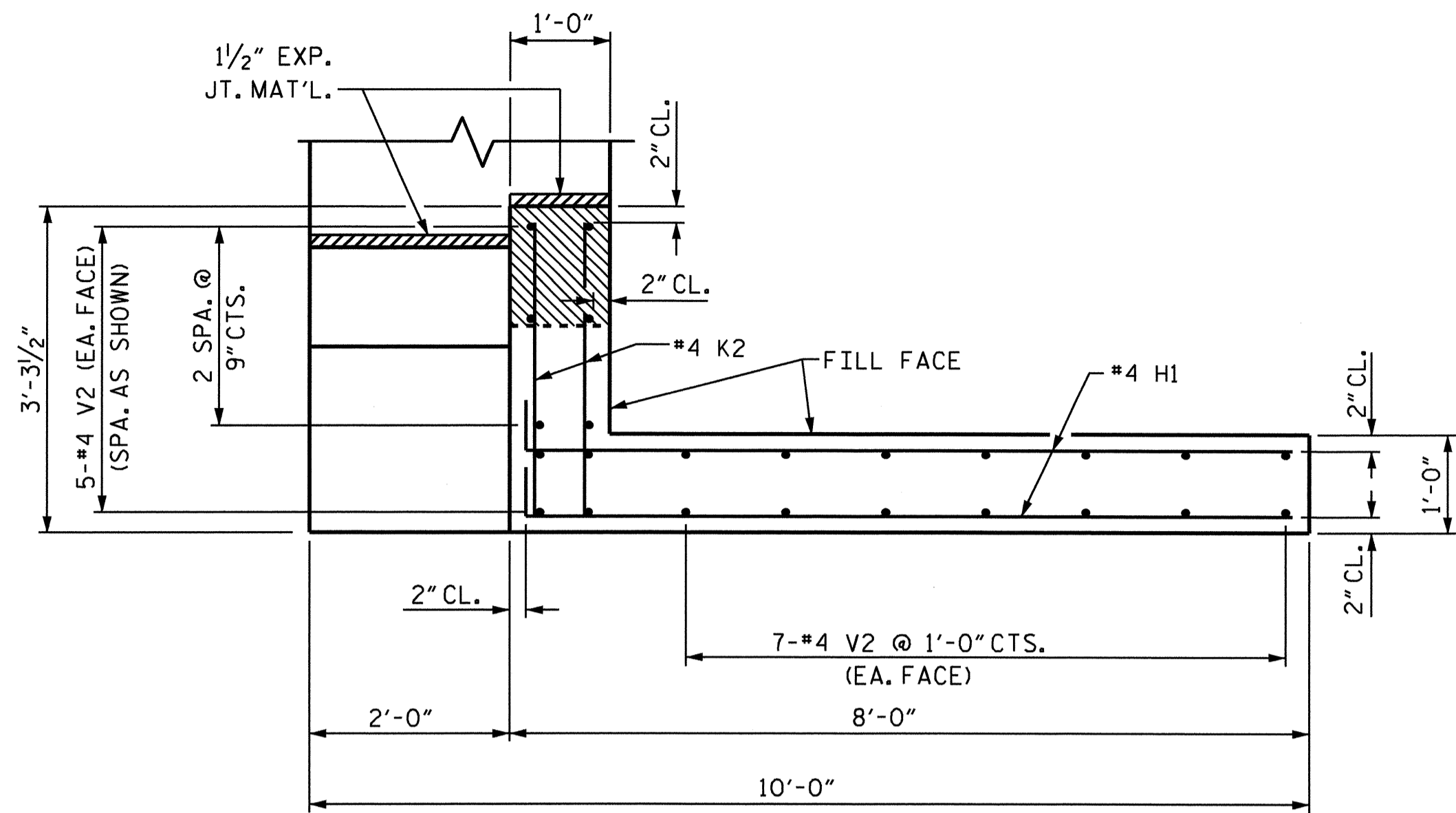


6/16/11

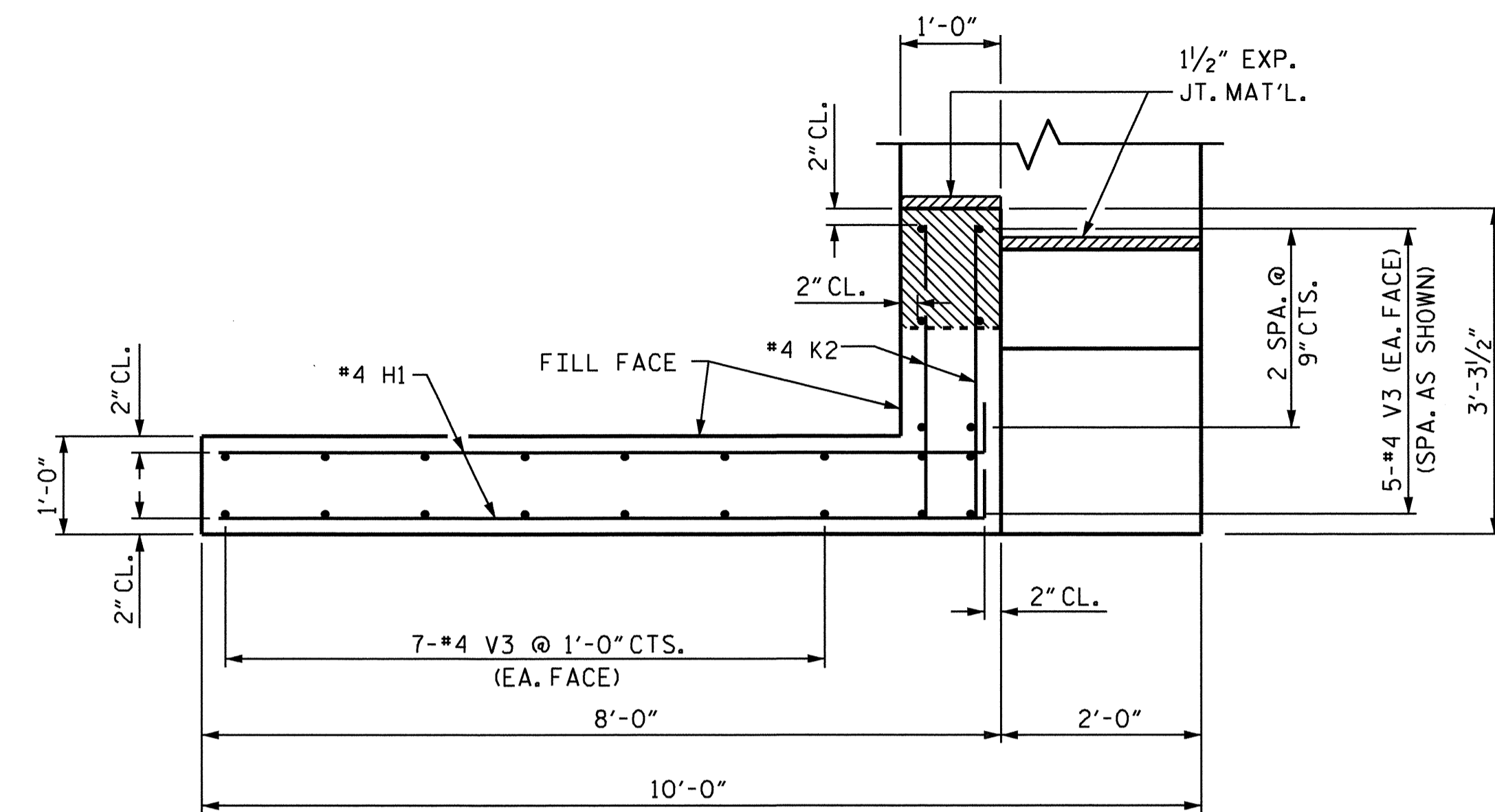
DRAWN BY : S. DOMBROWSKI DATE : 2/12/09  
 CHECKED BY : RAMAN PATEL DATE : 9-13-10

16-JUN-2011 11:12  
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 +fong

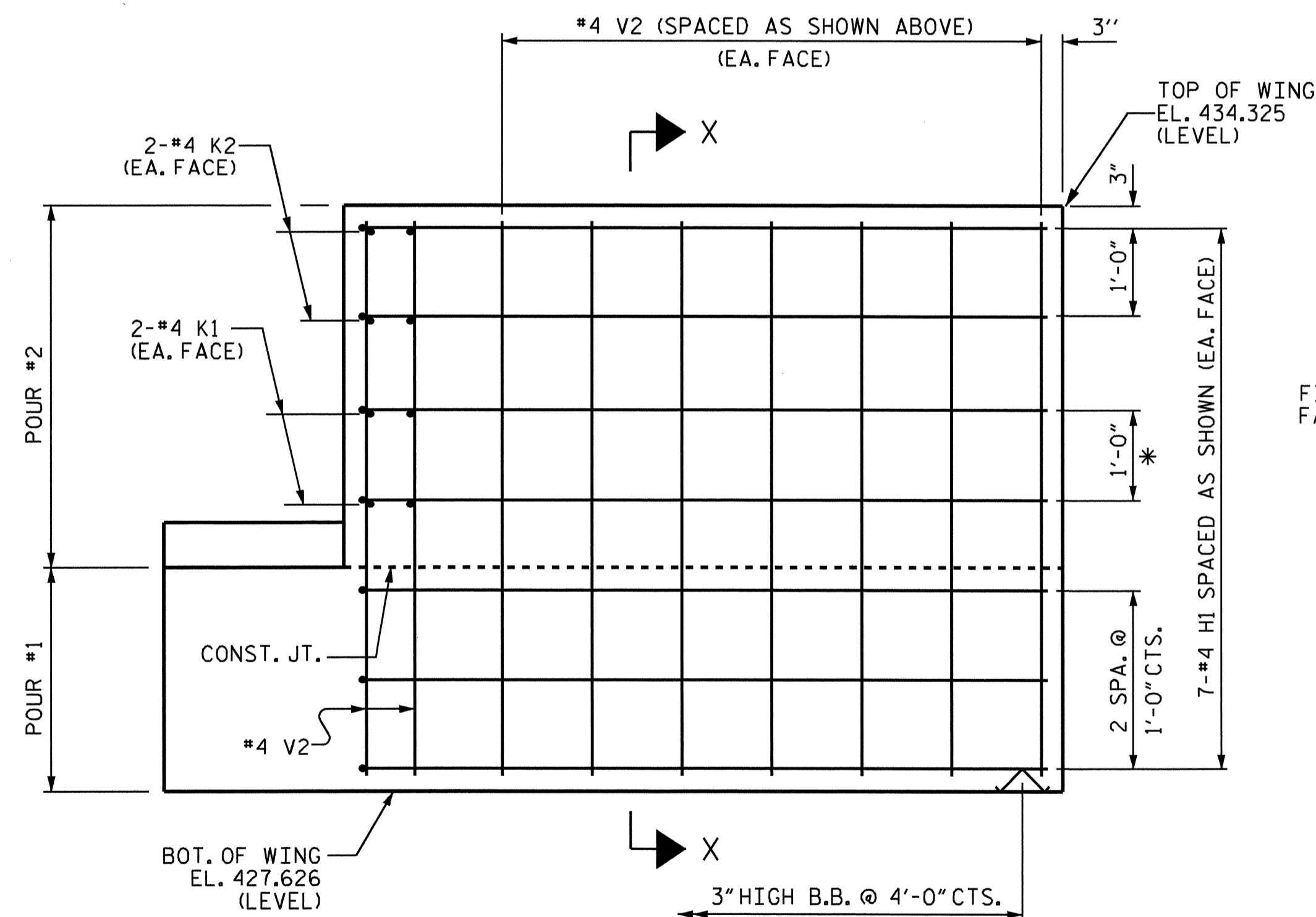
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			22



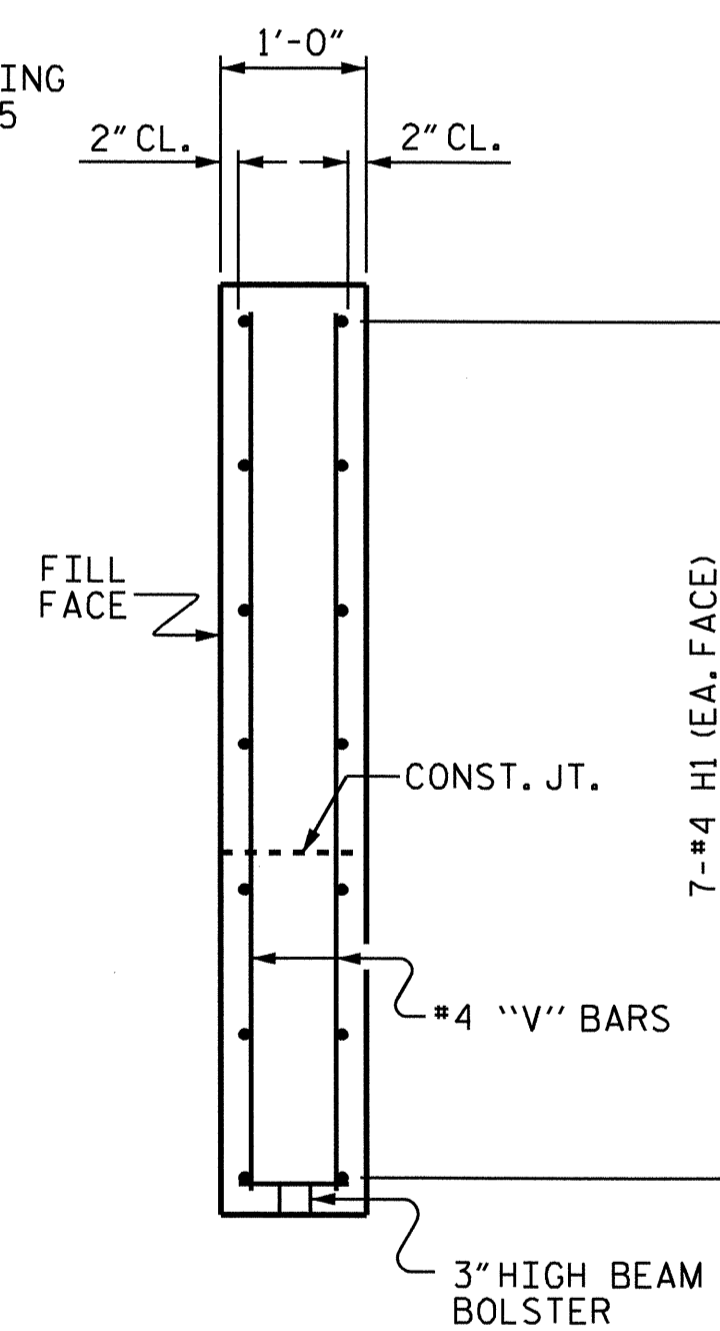
PLAN OF WING (W1)



PLAN OF WING (W2)

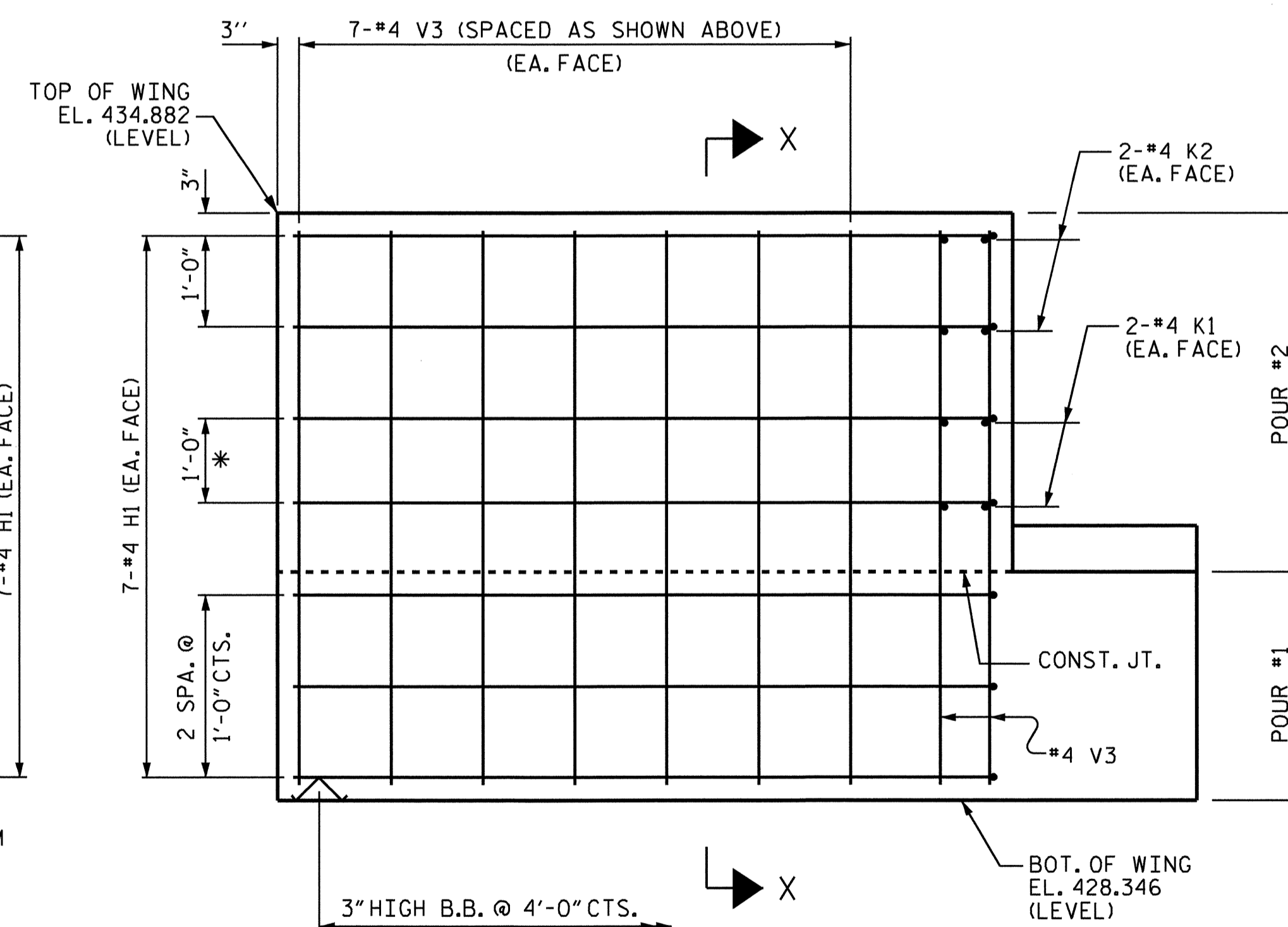


ELEVATION OF WING (W1)



SECTION X-X

\* MATCH WITH K1 BARS IN BACKWALL



ELEVATION OF WING (W2)



5/1/11

PROJECT NO. B-4582  
 MONTGOMERY COUNTY  
 STATION: 17+17.50 -L-

SHEET 2 OF 3

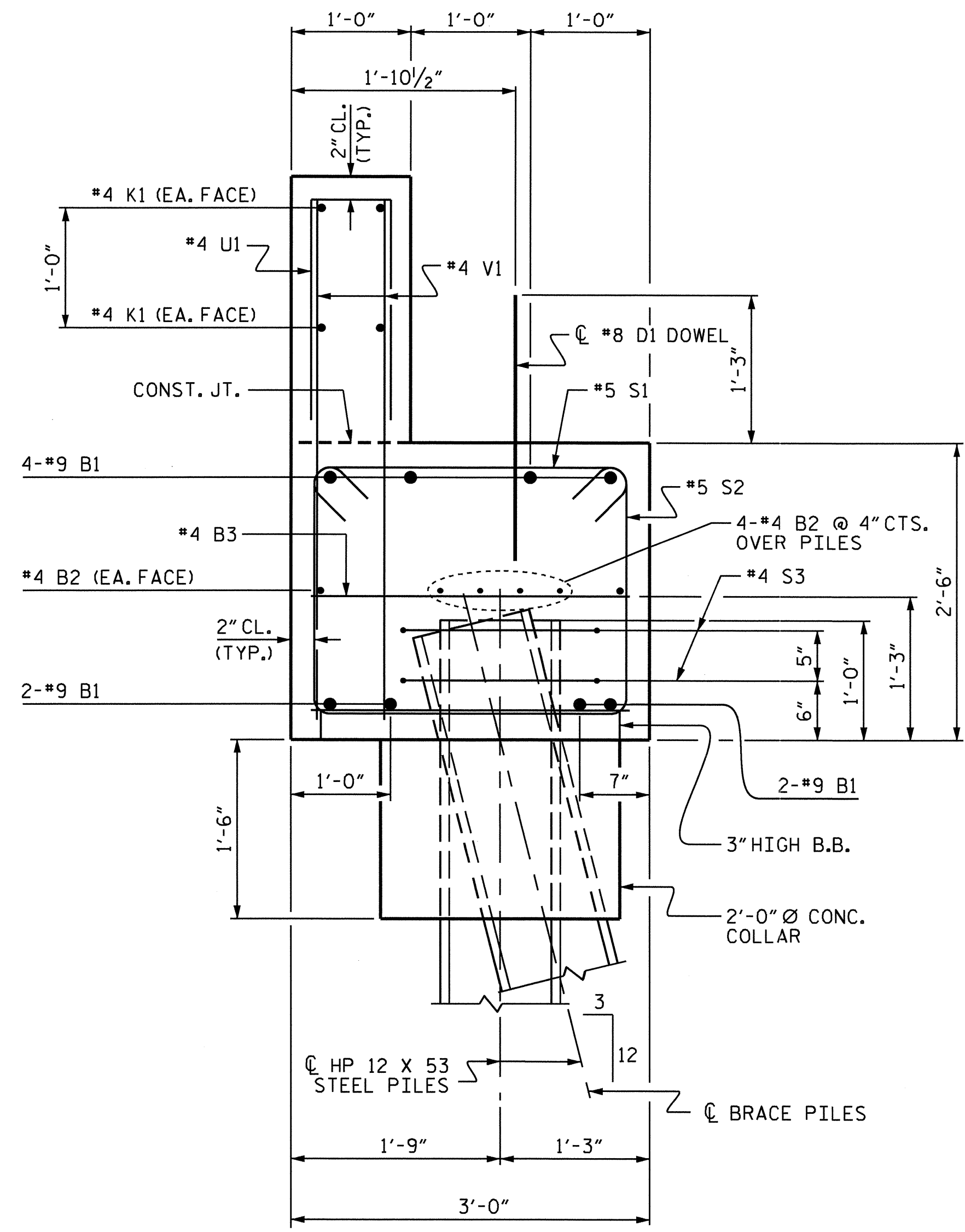
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE

END BENT 1

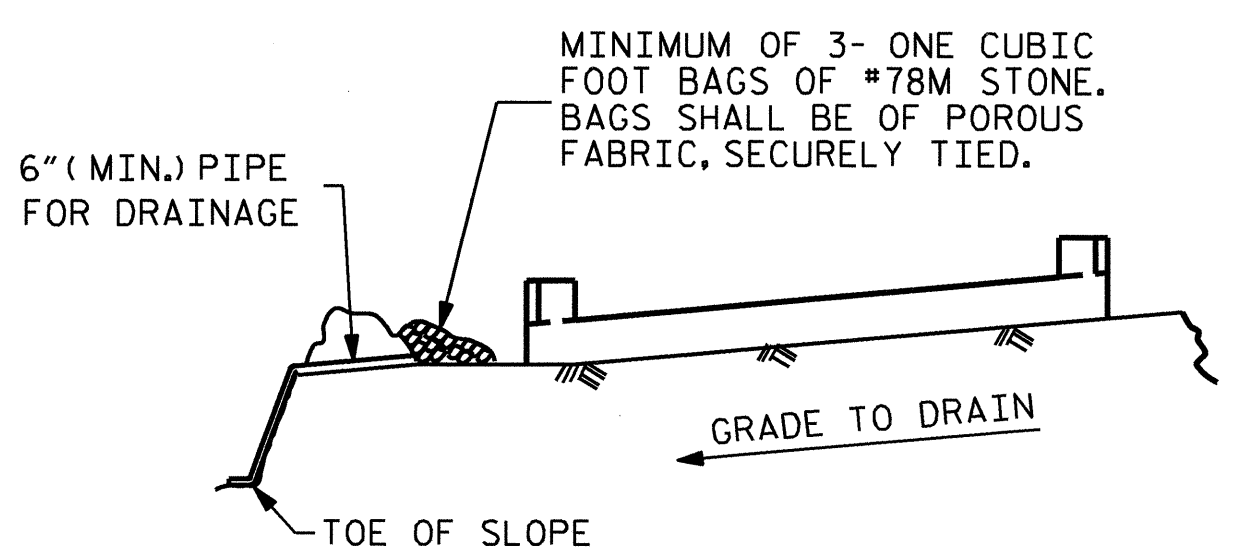
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 CHECKED BY: RAMAN PATEL DATE: 9/13/10

09-MAY-2011 15:04  
 X:\TIP\Projects-B\B4582\Structures\Final Plans\B4582.sd.e\*.dgn  
 khcompton

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			22



**SECTION A-A**

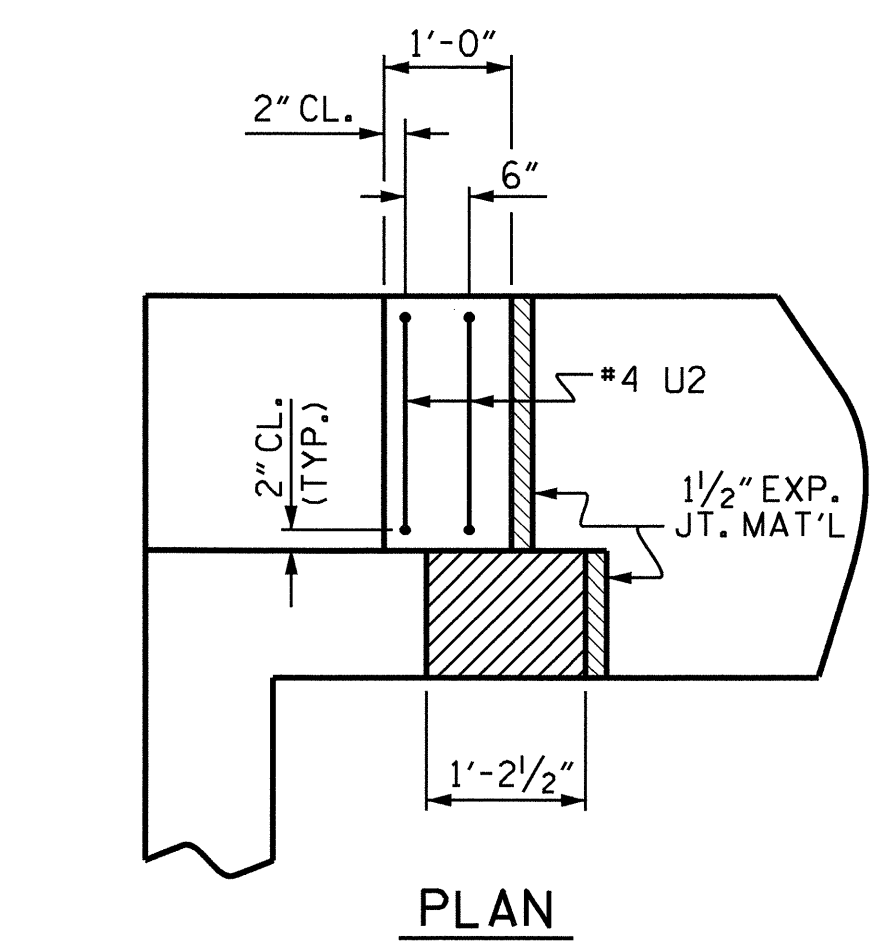


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

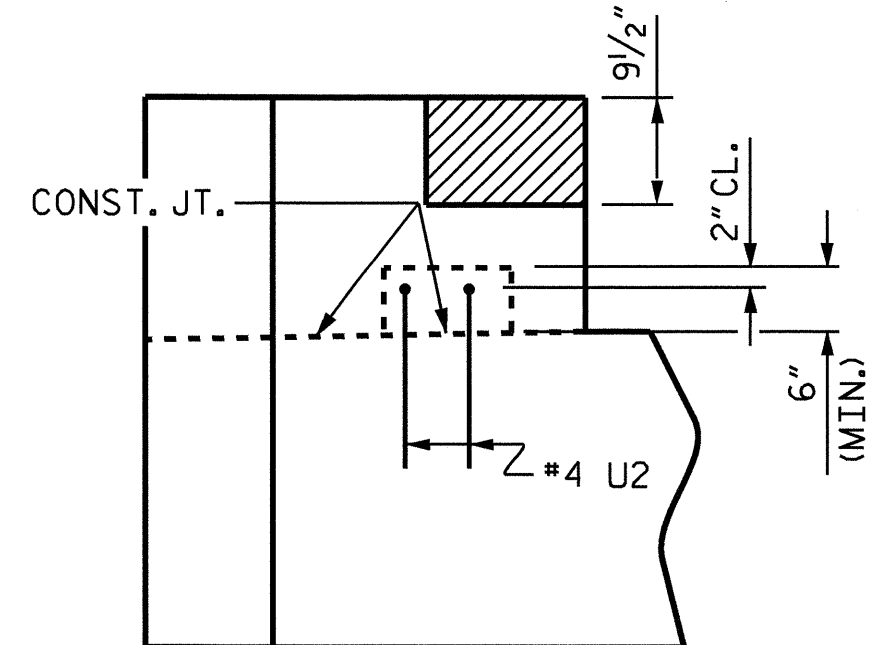
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

**TEMPORARY DRAINAGE AT END BENT**

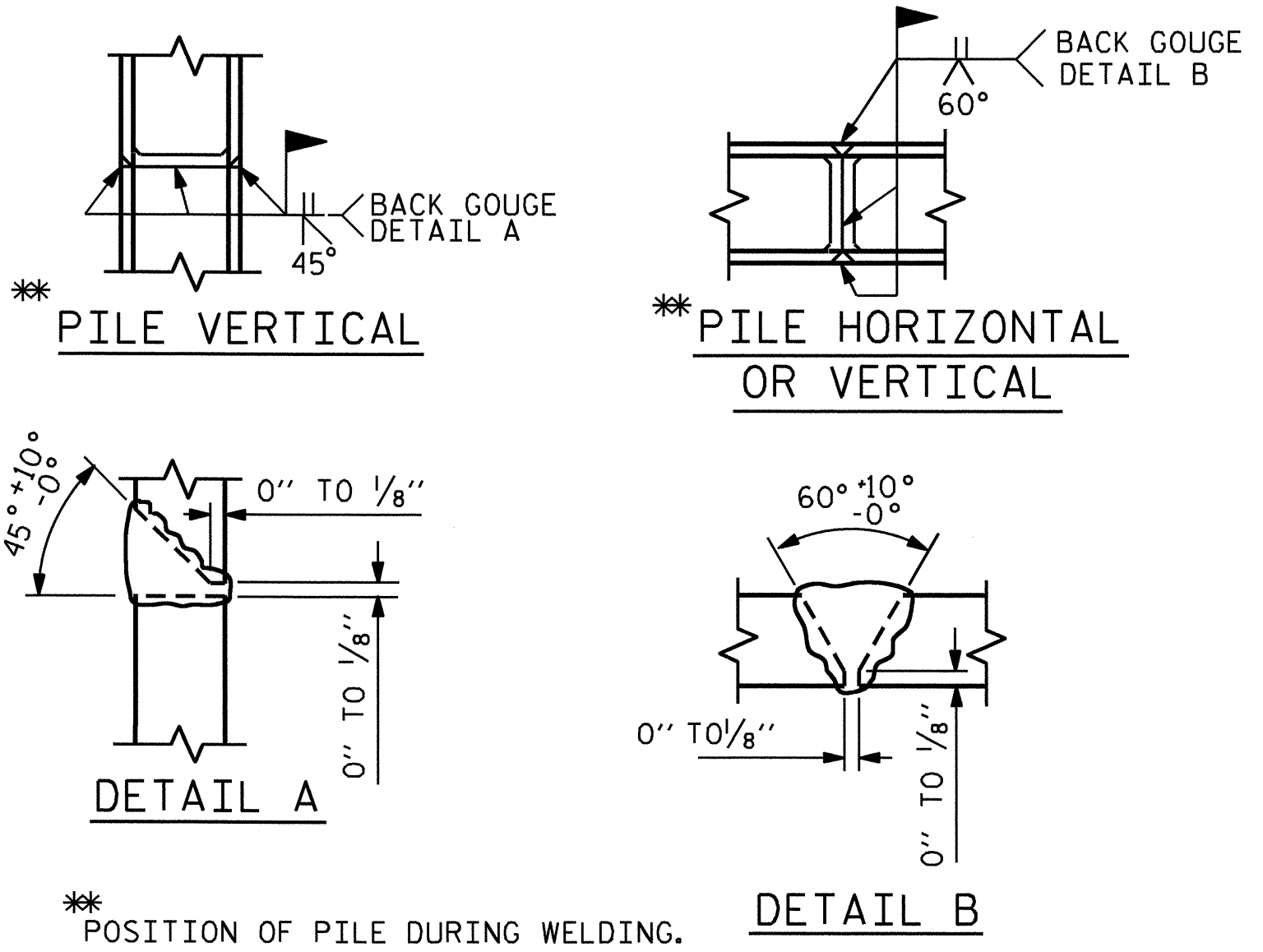


**PLAN**

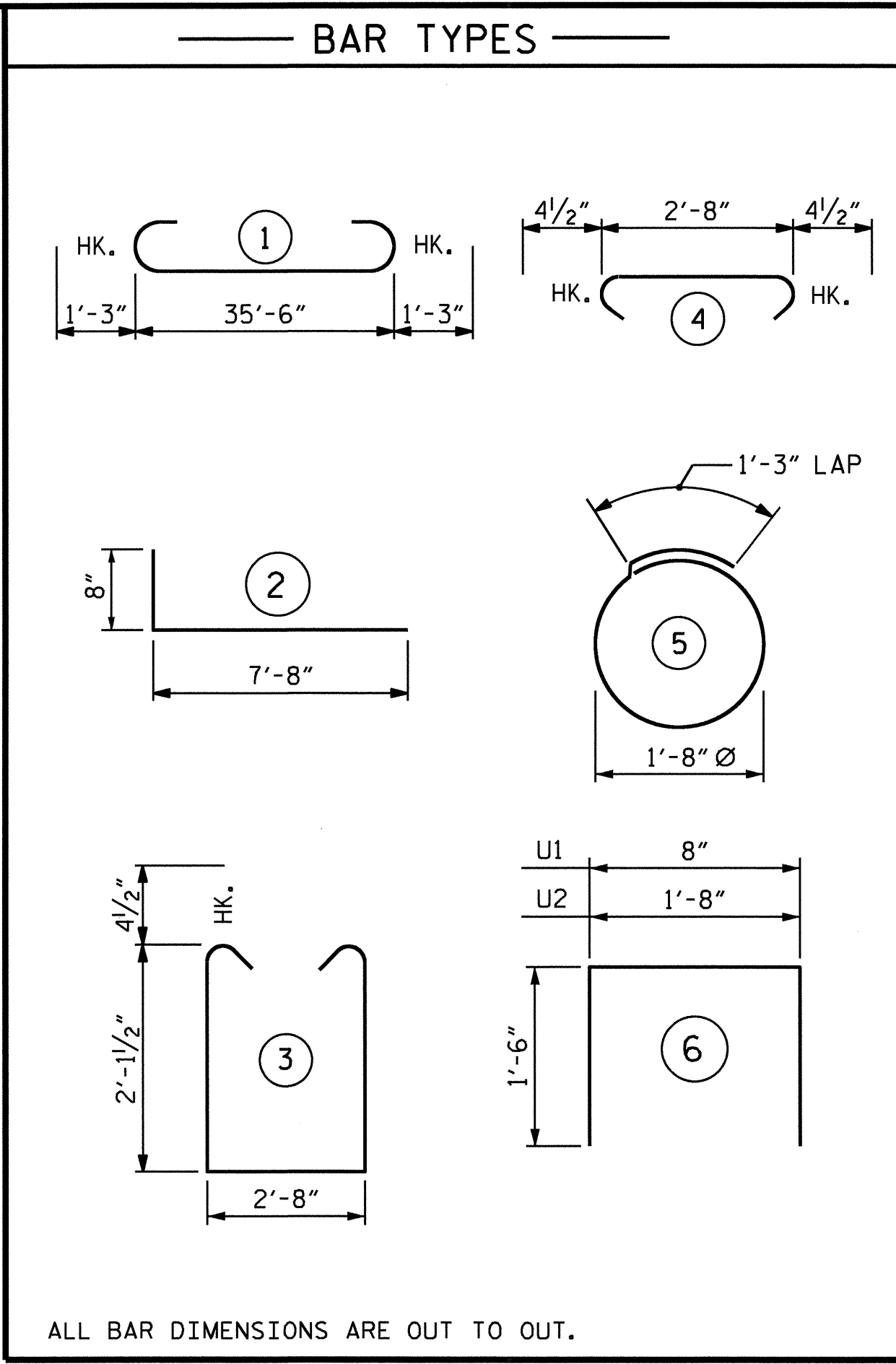


**ELEVATION**

**LATERAL GUIDE DETAILS**  
(EACH END SIMILAR)



**PILE SPLICE DETAILS**



ALL BAR DIMENSIONS ARE OUT TO OUT.

**BILL OF MATERIAL**

**END BENT 1**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	38'-0"	1034
B2	12	#4	STR	19'-1"	153
B3	9	#4	STR	2'-8"	16
D1	20	#8	STR	2'-3"	120
H1	28	#4	2	8'-4"	156
K1	8	#4	STR	19'-1"	102
K2	8	#4	STR	2'-11"	16
S1	42	#4	4	3'-5"	96
S2	42	#4	3	7'-8"	215
S3	10	#4	5	6'-6"	43
U1	29	#4	6	3'-8"	71
U2	4	#4	6	4'-8"	12
V1	58	#4	STR	4'-2"	161
V2	24	#4	STR	6'-4"	102
V3	24	#4	STR	6'-2"	99

REINFORCING STEEL 2396 LBS.

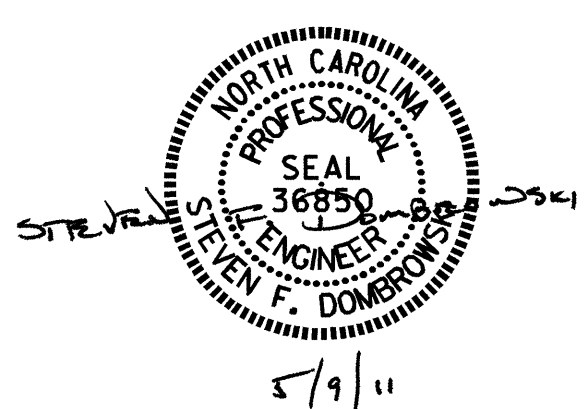
CLASS A CONCRETE BREAKDOWN:  
 POUR #1 (CONCRETE COLLARS, CAP & LOWER WINGS) 12.2 C.Y.  
 POUR #2 (UPPER WINGS) 5.8 C.Y.  
 POUR #3 (LATERAL GUIDES) 0.1 C.Y.  
 TOTAL CLASS A CONCRETE: 18.1 C.Y.

HP 12X53 STEEL PILES:  
 NO. 5 75 LIN. FT.  
 STEEL PILE POINTS 5 EA.

PROJECT NO. B-4582  
MONTGOMERY COUNTY  
 STATION: 17+17.50 -L-

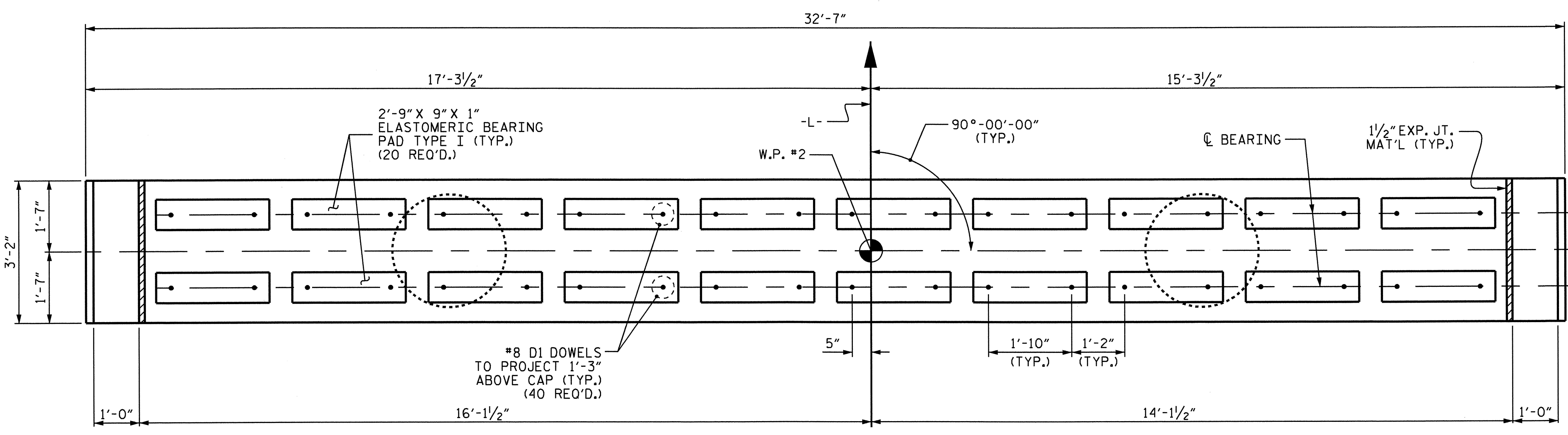
SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 1

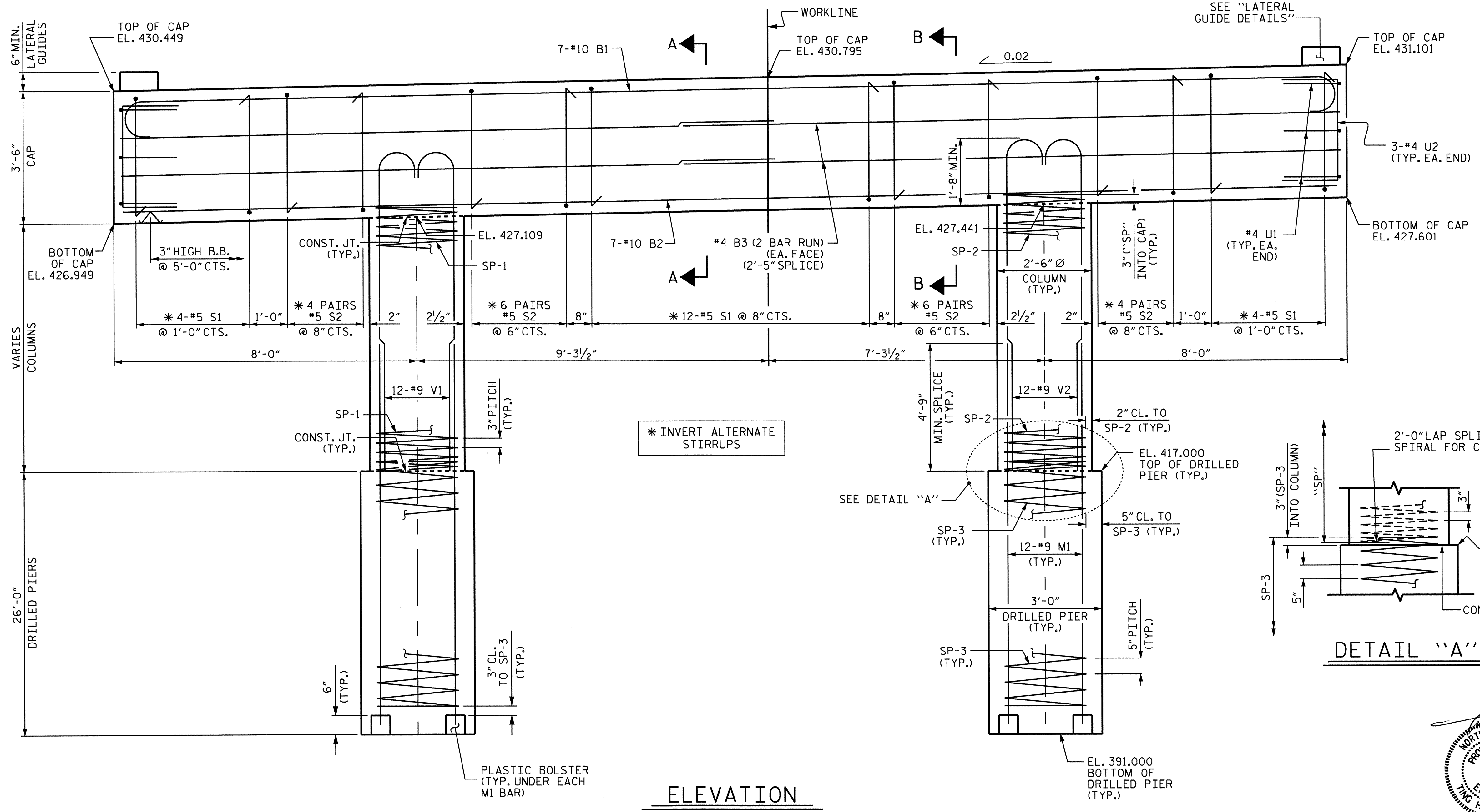


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			22

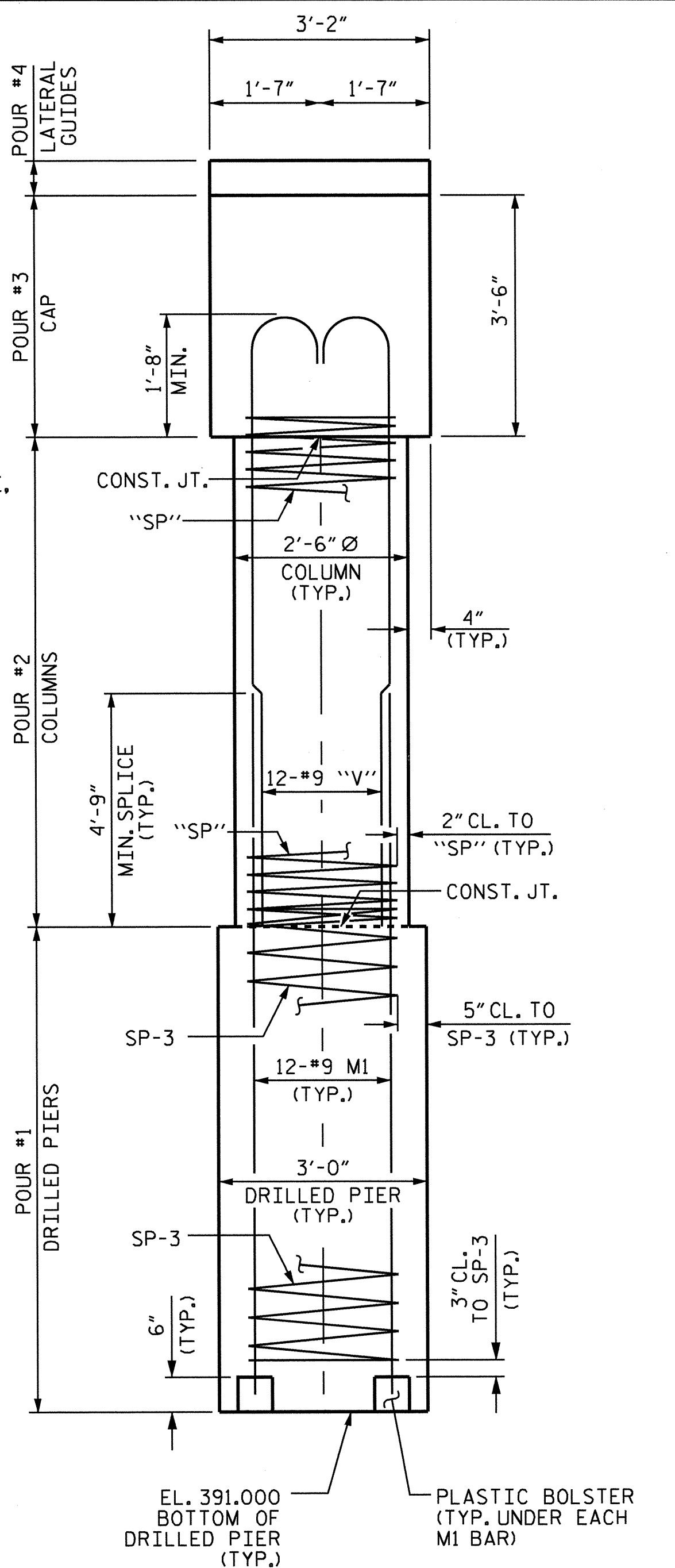
DRAWN BY: S. DOMBROWSKI DATE: 3/4/09  
 CHECKED BY: RAMAN PATEL DATE: 9/13/10



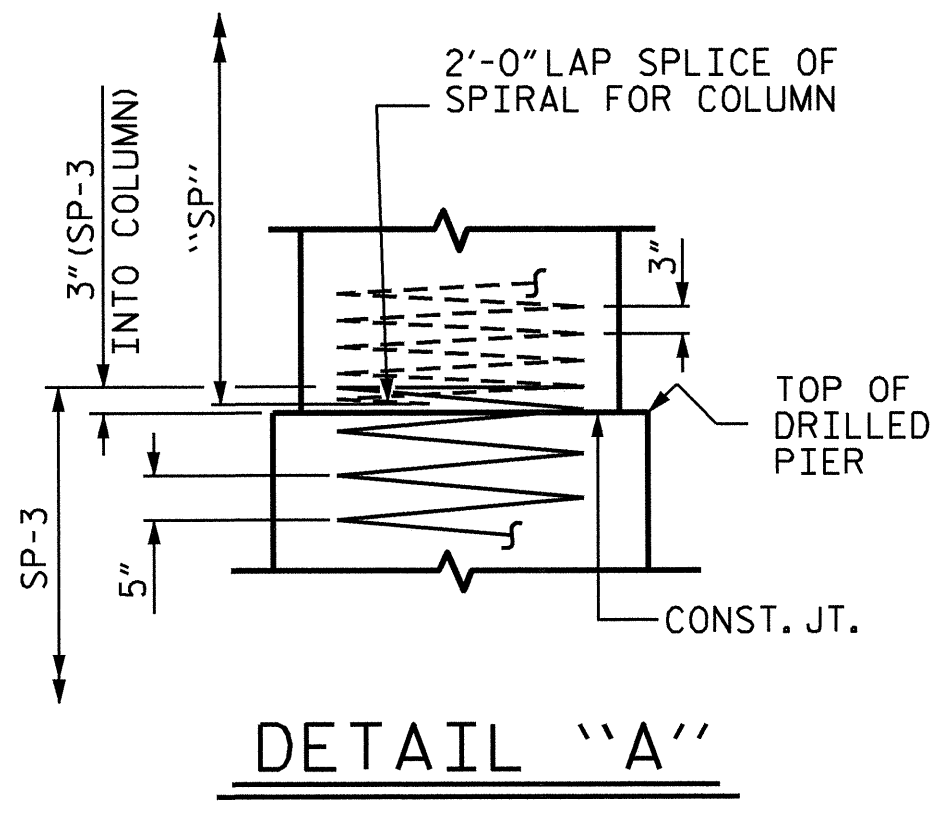
PLAN



ELEVATION



END ELEVATION

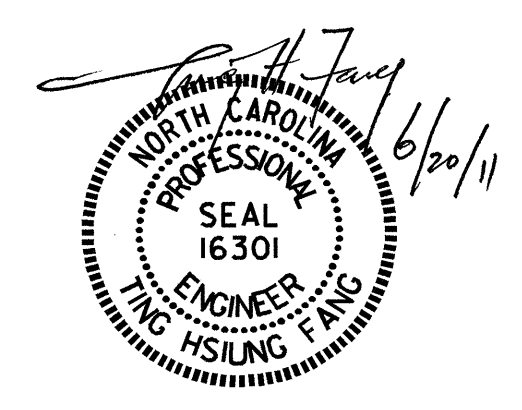


DETAIL "A"

PROJECT NO. B-4582  
MONTGOMERY COUNTY  
 STATION: 17+17.50 -L-

SHEET 1 OF 2

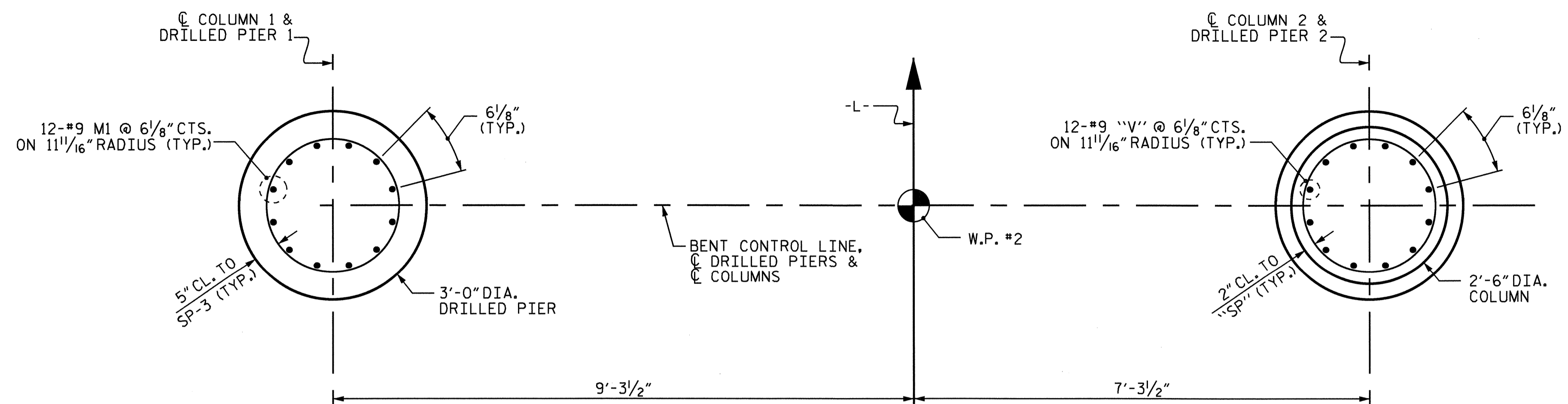
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
BENT 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



DRAWN BY: S. DOMBROWSKI DATE: 3/20/09  
 CHECKED BY: RAMAN PATEL DATE: 9/14/10

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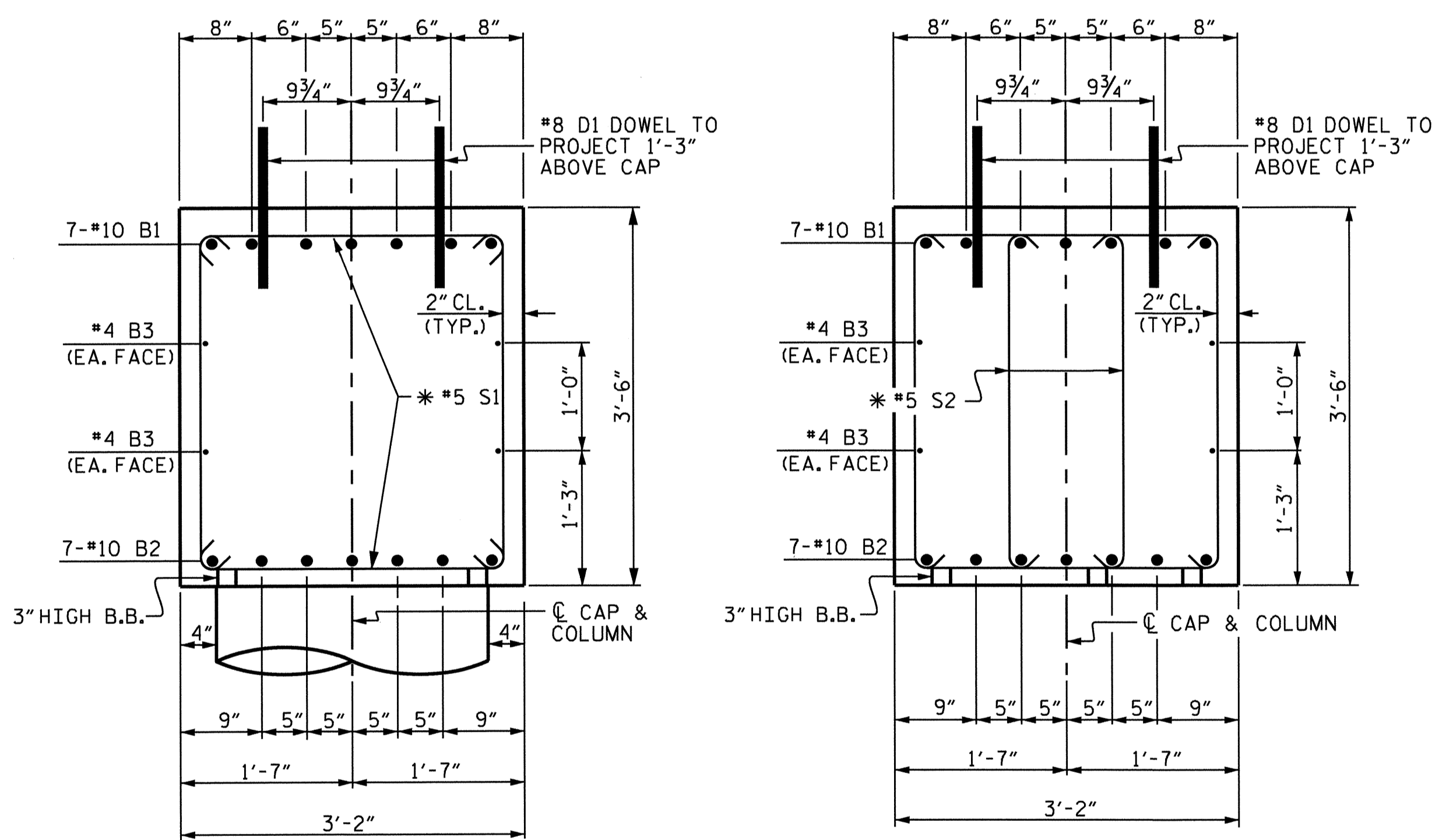




PARTIAL PLAN OF DRILLED PIER

PARTIAL PLAN OF COLUMN

PLAN OF COLUMNS & DRILLED PIERS

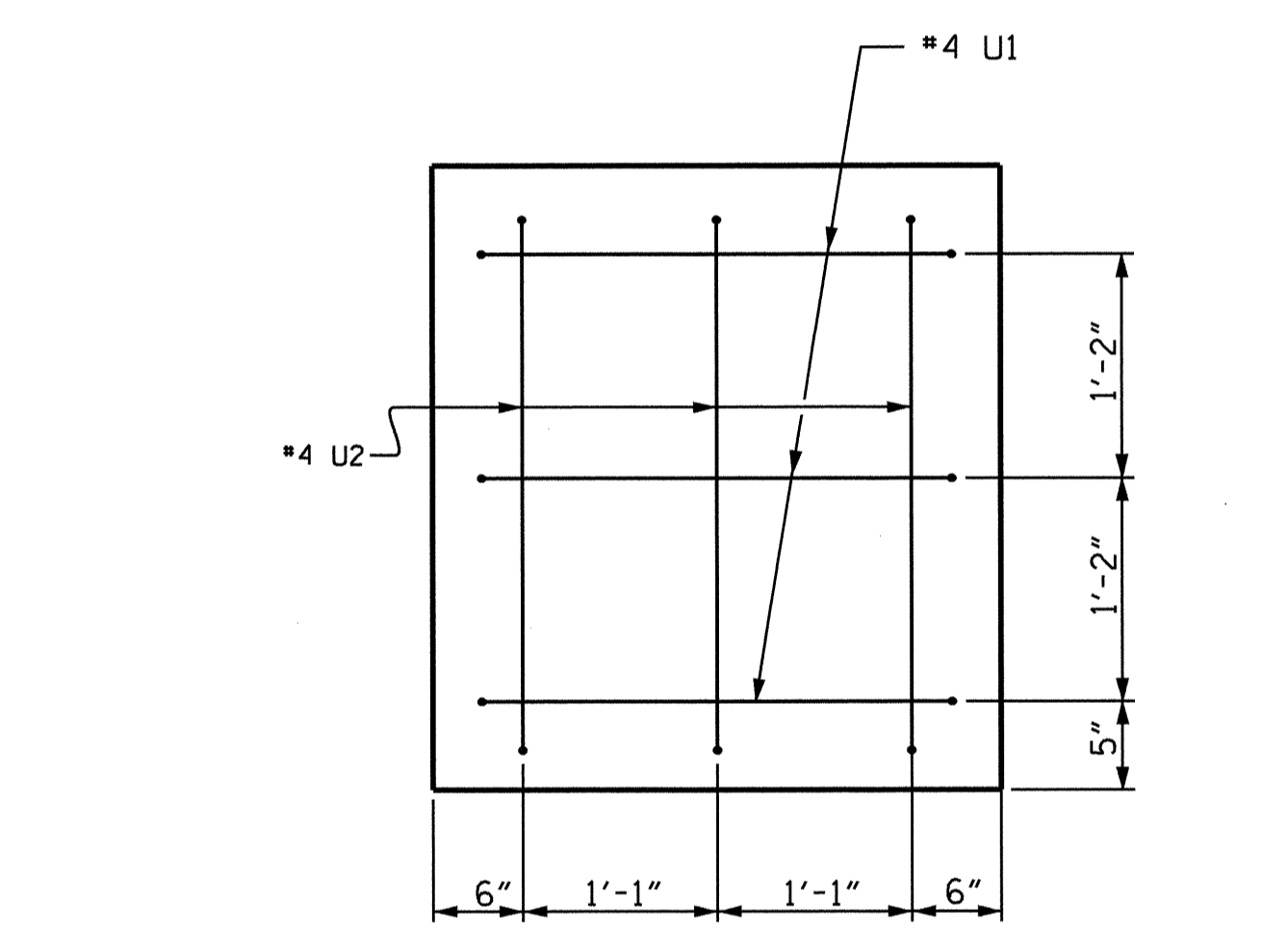


SECTION A-A

SECTION B-B

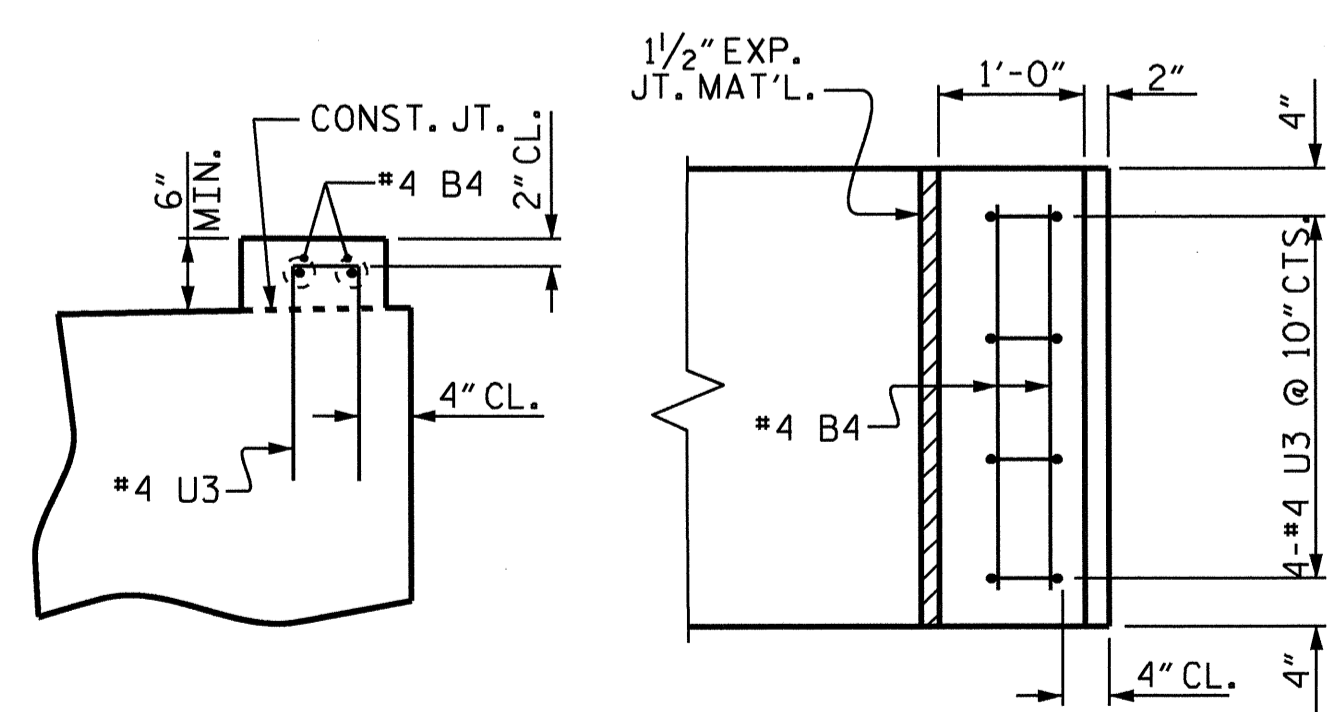
\* INVERT ALTERNATE STIRRUPS

\* INVERT ALTERNATE STIRRUPS



END VIEW

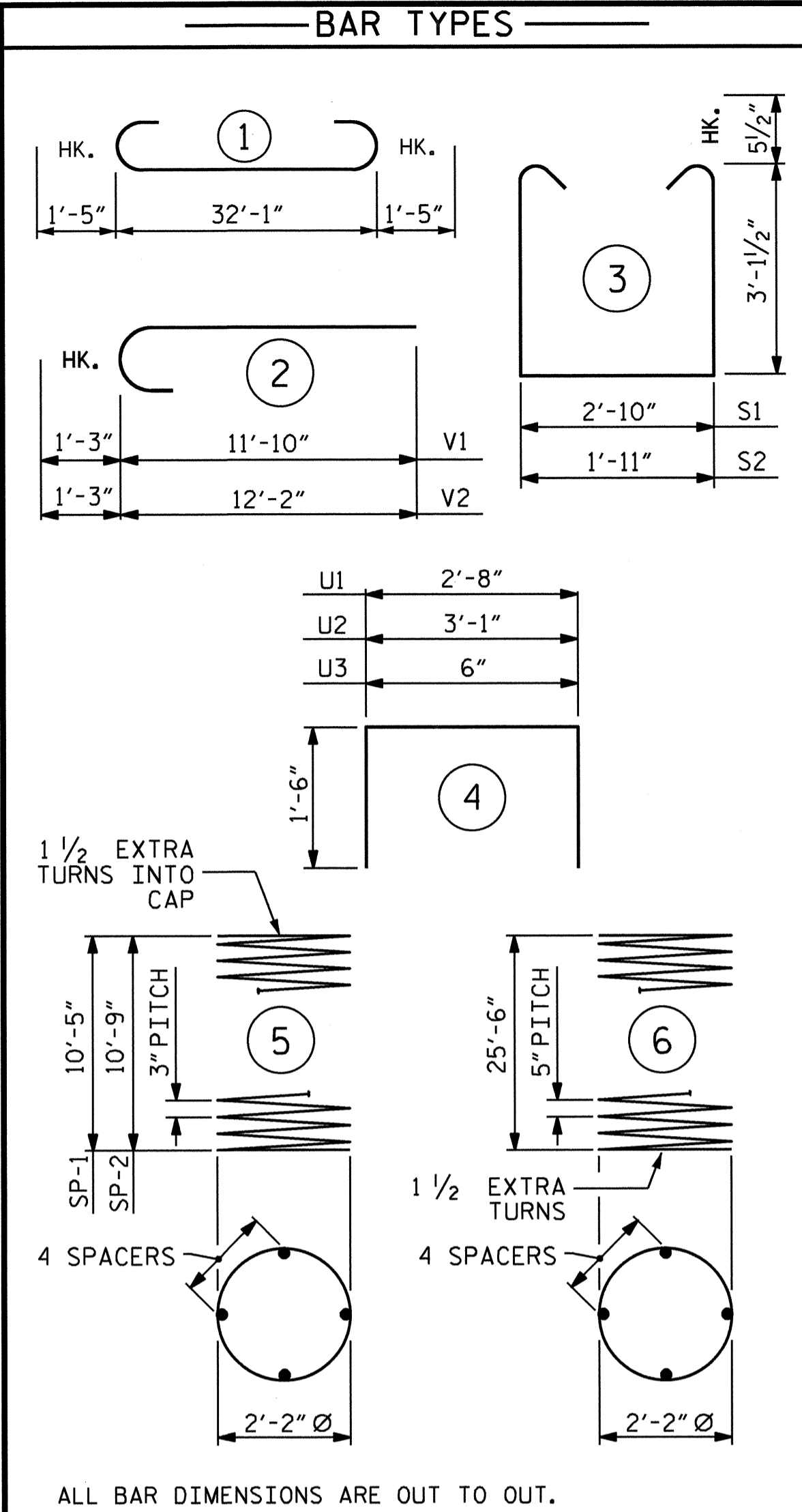
(TYP. EA. END)



ELEVATION

PLAN

LATERAL GUIDE DETAILS



NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

BILL OF MATERIAL					
BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	#10	1	34'-11"	1052
B2	7	#10	STR.	32'-3"	971
B3	8	#4	STR.	17'-4"	93
B4	4	#4	STR.	2'-10"	8
D1	40	#8	STR.	2'-3"	240
M1	24	#9	STR.	33'-6"	2734
S1	20	#5	3	10'-0"	209
S2	40	#5	3	9'-1"	379
U1	6	#4	4	5'-8"	23
U2	6	#4	4	6'-1"	24
U3	8	#4	4	3'-6"	19
V1	12	#9	2	13'-1"	534
V2	12	#9	2	13'-5"	547
REINFORCING STEEL					6833 LBS.
SP-1	1	**	5	290'-9"	194
SP-2	1	**	5	298'-6"	199
SP-3	2	**	6	418'-3"	873
TOTAL SPIRAL COLUMN REINFORCING STEEL					1266 LBS.
CLASS A CONCRETE BREAKDOWN:					
POUR #2 (COLUMNS)					3.9 C.Y.
POUR #3 (CAP)					13.4 C.Y.
POUR #4 (LATERAL GUIDES)					0.1 C.Y.
TOTAL CLASS A CONCRETE:					17.4 C.Y.
3'-0" Ø DRILLED PIER QUANTITIES					
DRILLED PIER CONCRETE: POUR #1 (DRILLED PIERS)					13.6 C.Y.
3'-0" DIA. DRILLED PIERS IN SOIL					22.00 LIN.FT.
3'-0" DIA. DRILLED PIERS NOT IN SOIL					30.00 LIN.FT.
PERMANENT STEEL CASING FOR 3'-0" DIA. DRILLED PIER					16.00 LIN.FT.
CSL TUBES:					228 LIN.FT.

\* THE SP-1 AND SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

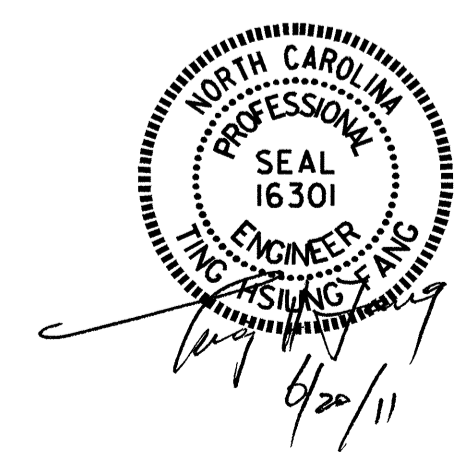
\*\* THE SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

PROJECT NO. B-4582  
MONTGOMERY COUNTY  
 STATION: 17+17.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
BENT 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-16  
TOTAL SHEETS 22



DRAWN BY : S. DOMBROWSKI DATE : 3/20/09  
 CHECKED BY : RAMAN PATEL DATE : 9/14/10

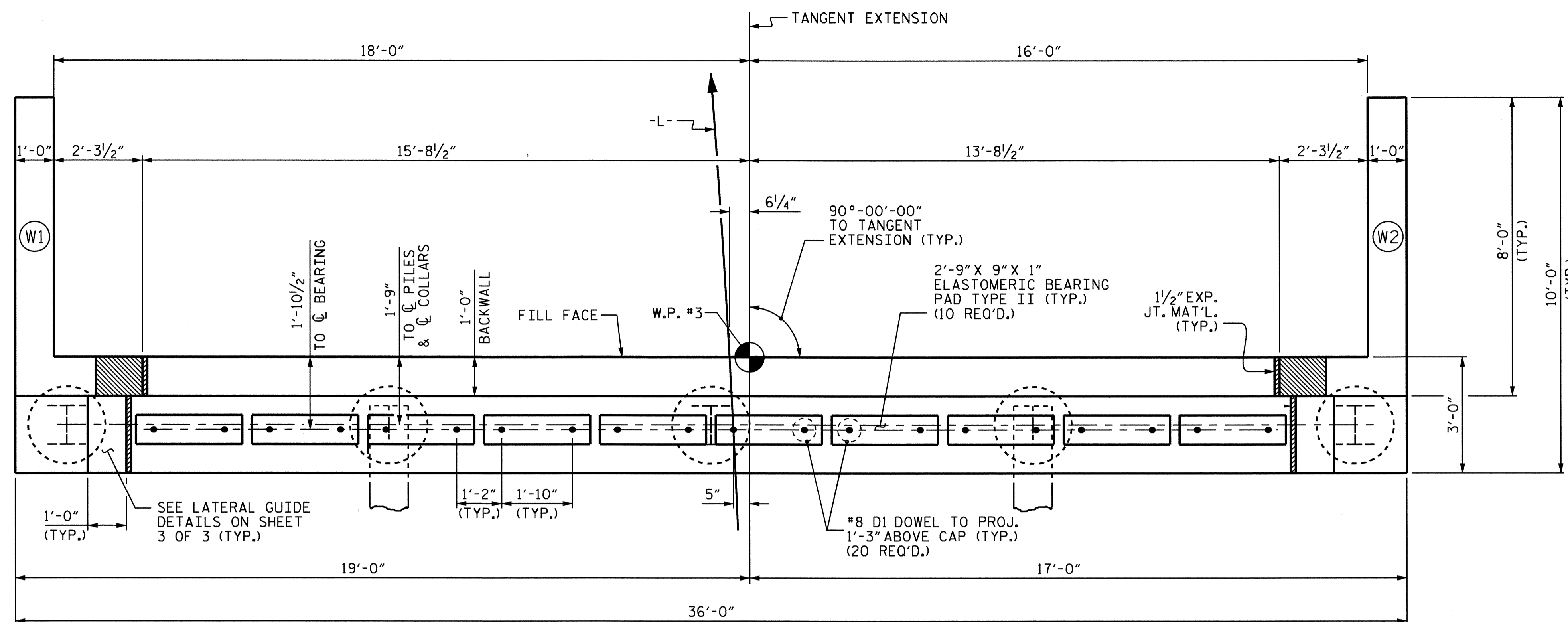
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

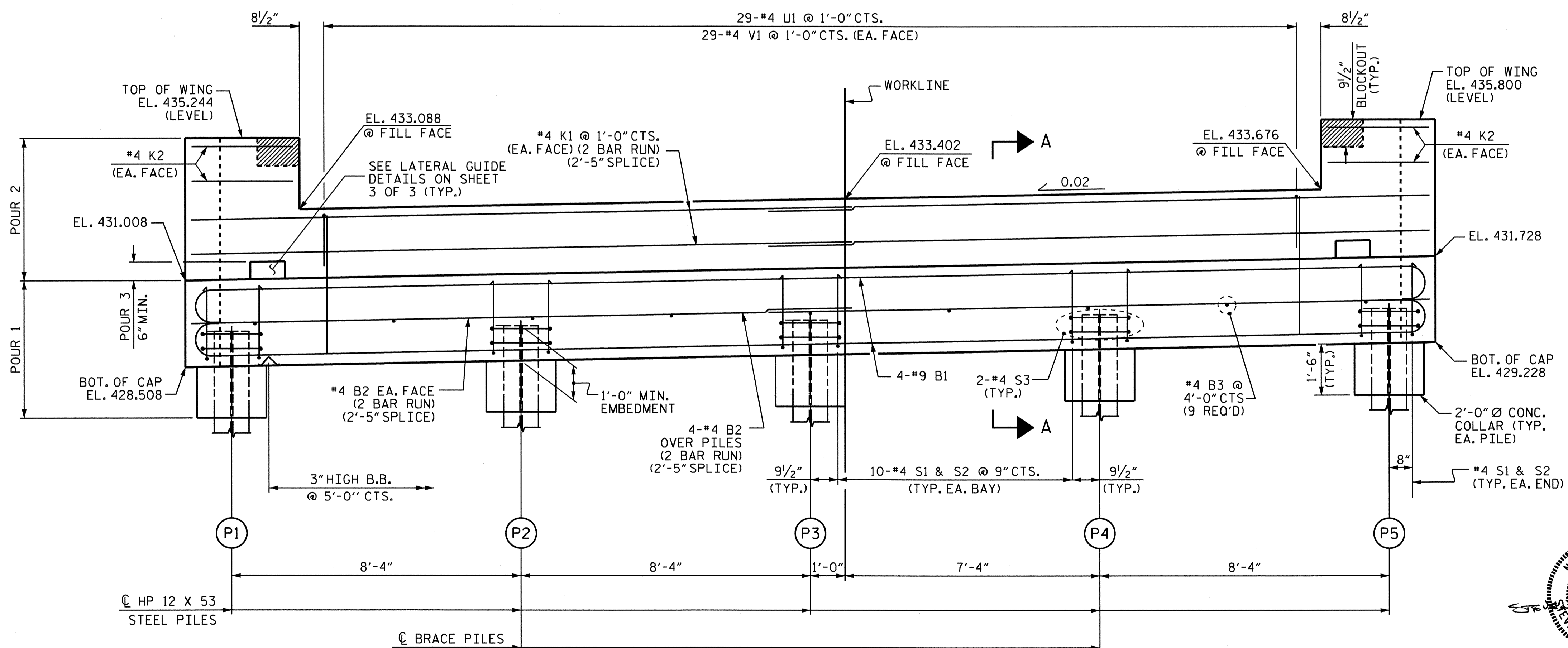
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER PRESTRESSED BOX BEAMS ARE IN PLACE.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.

THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.



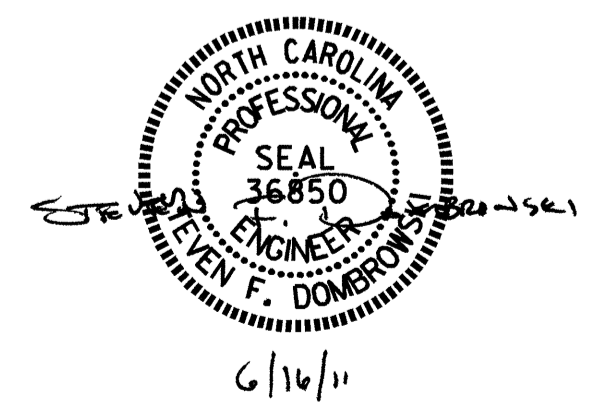
PLAN



ELEVATION

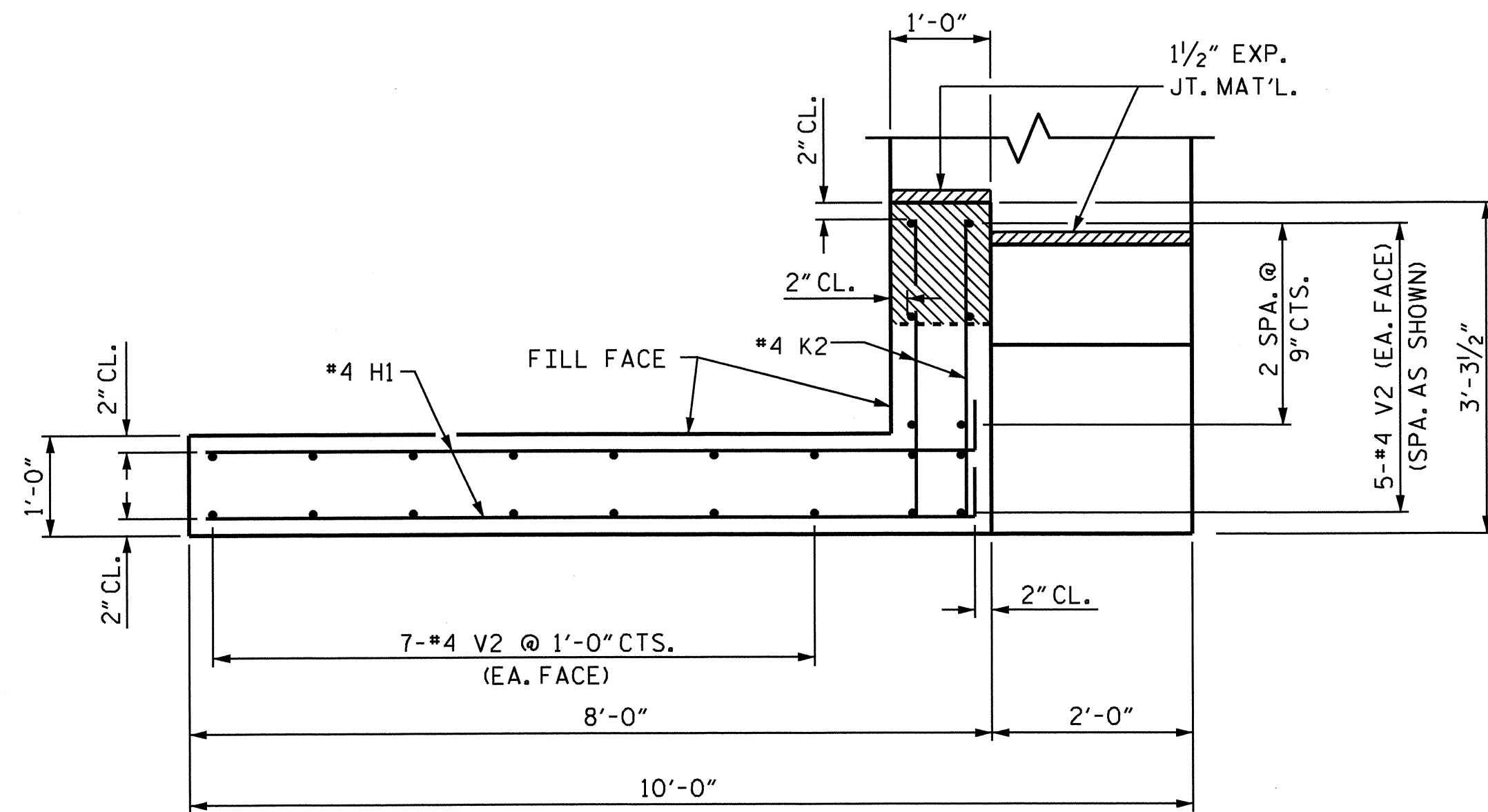
TOP OF PILE ELEVATIONS	
P1	429.535
P2	429.702
P3	429.868
P4	430.035
P5	430.202

PROJECT NO. B-4582  
MONTGOMERY COUNTY  
 STATION: 17+17.50 -L-  
 SHEET 1 OF 3

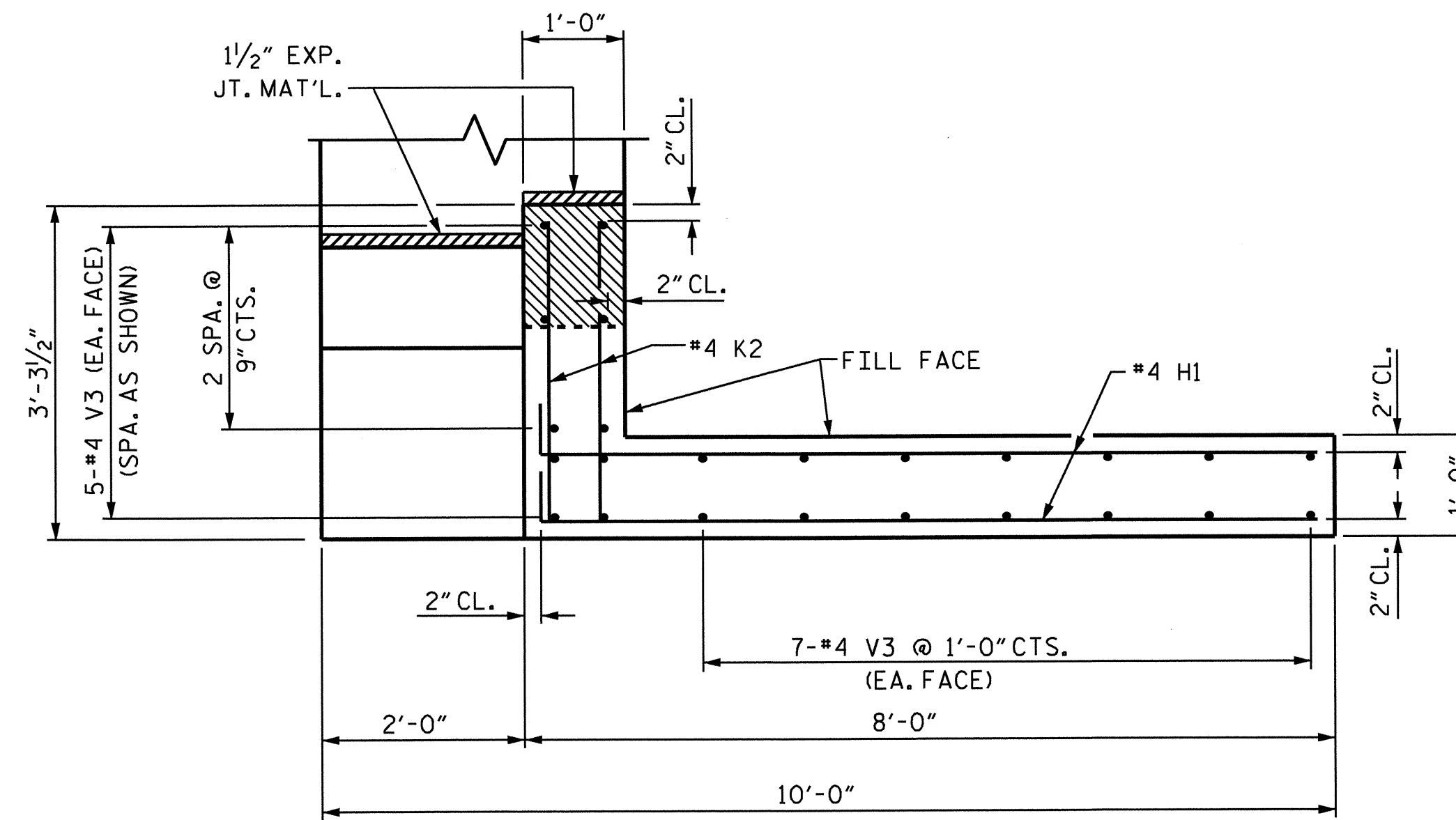


DRAWN BY : S. DOMBROWSKI DATE : 2/12/09  
 CHECKED BY : RAMAN PATEL DATE : 9-14-10

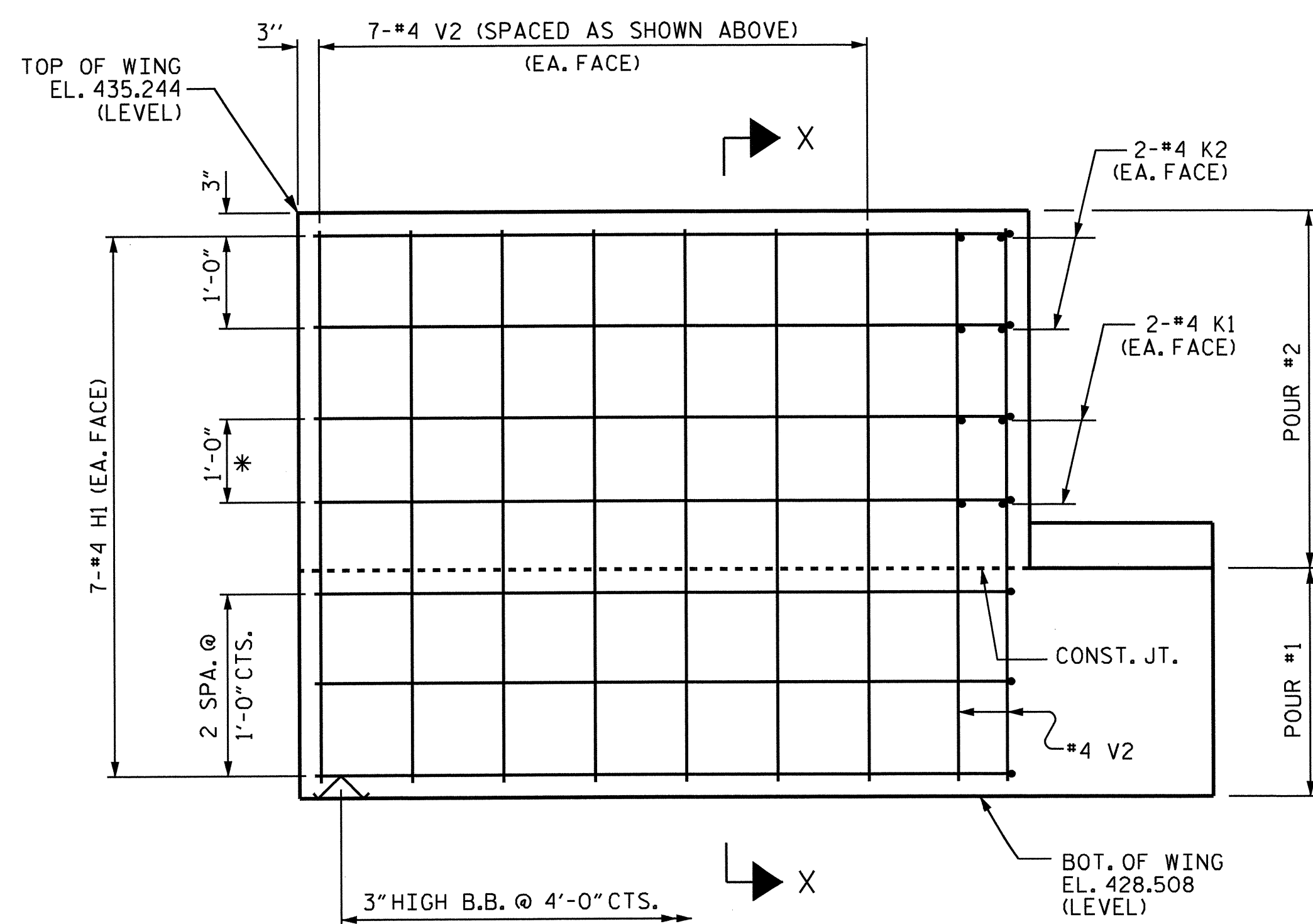
REVISIONS						SHEET NO. S-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			



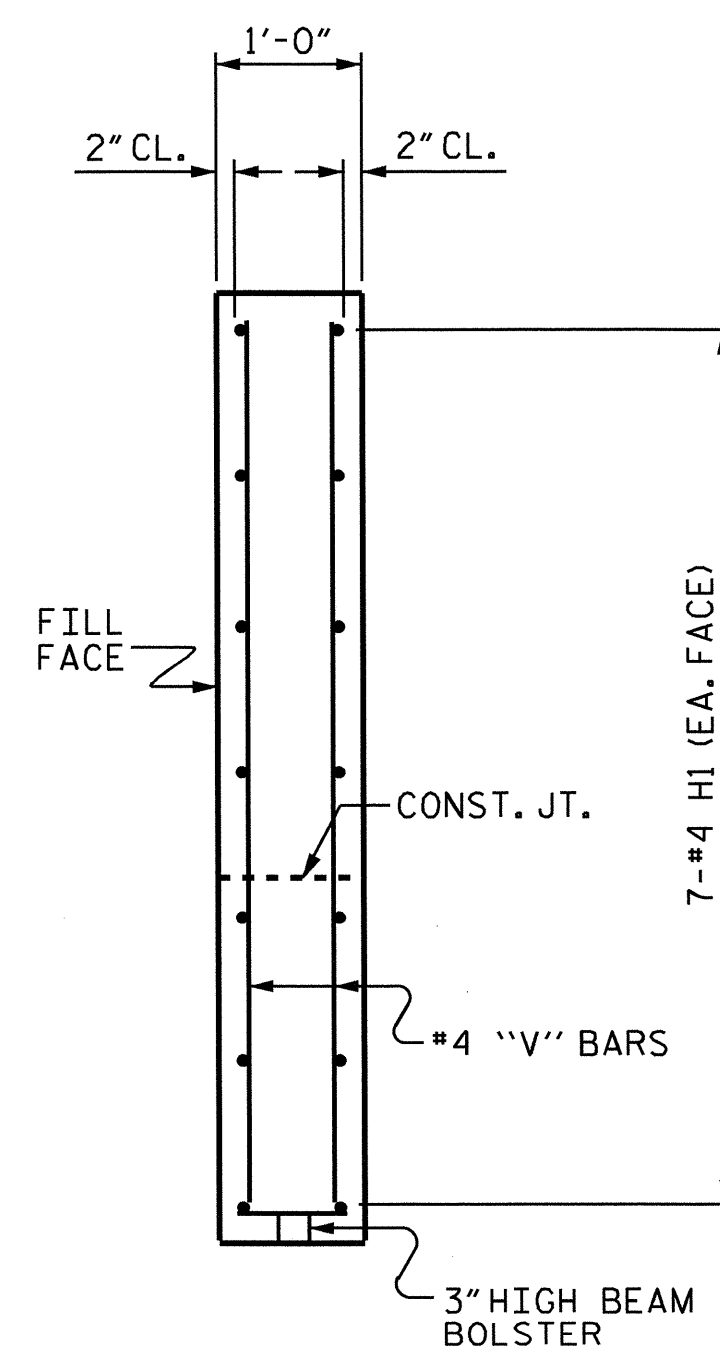
PLAN OF WING (W1)



PLAN OF WING (W2)

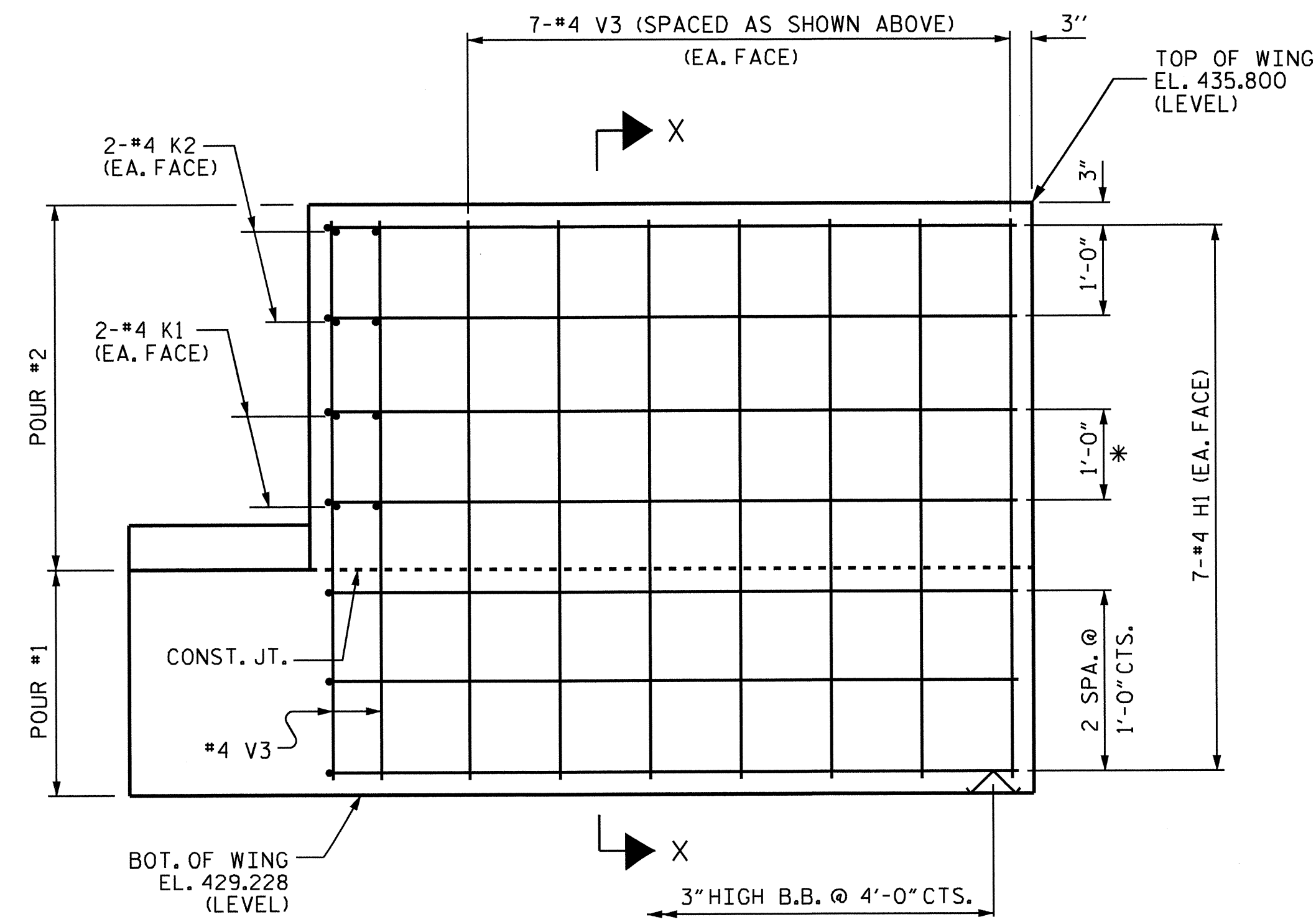


ELEVATION OF WING (W1)

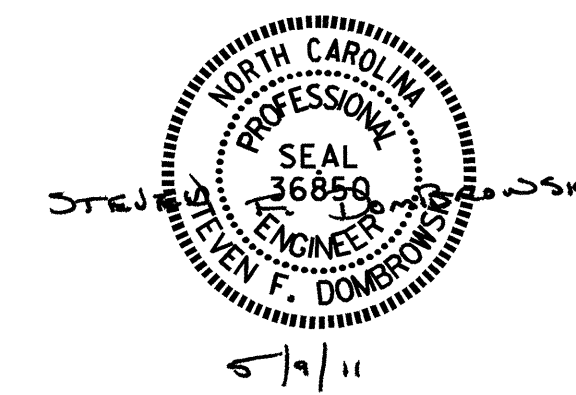


SECTION X-X

\* MATCH WITH K1 BARS IN BACKWALL



ELEVATION OF WING (W2)



PROJECT NO. B-4582  
 MONTGOMERY COUNTY  
 STATION: 17+17.50 -L-

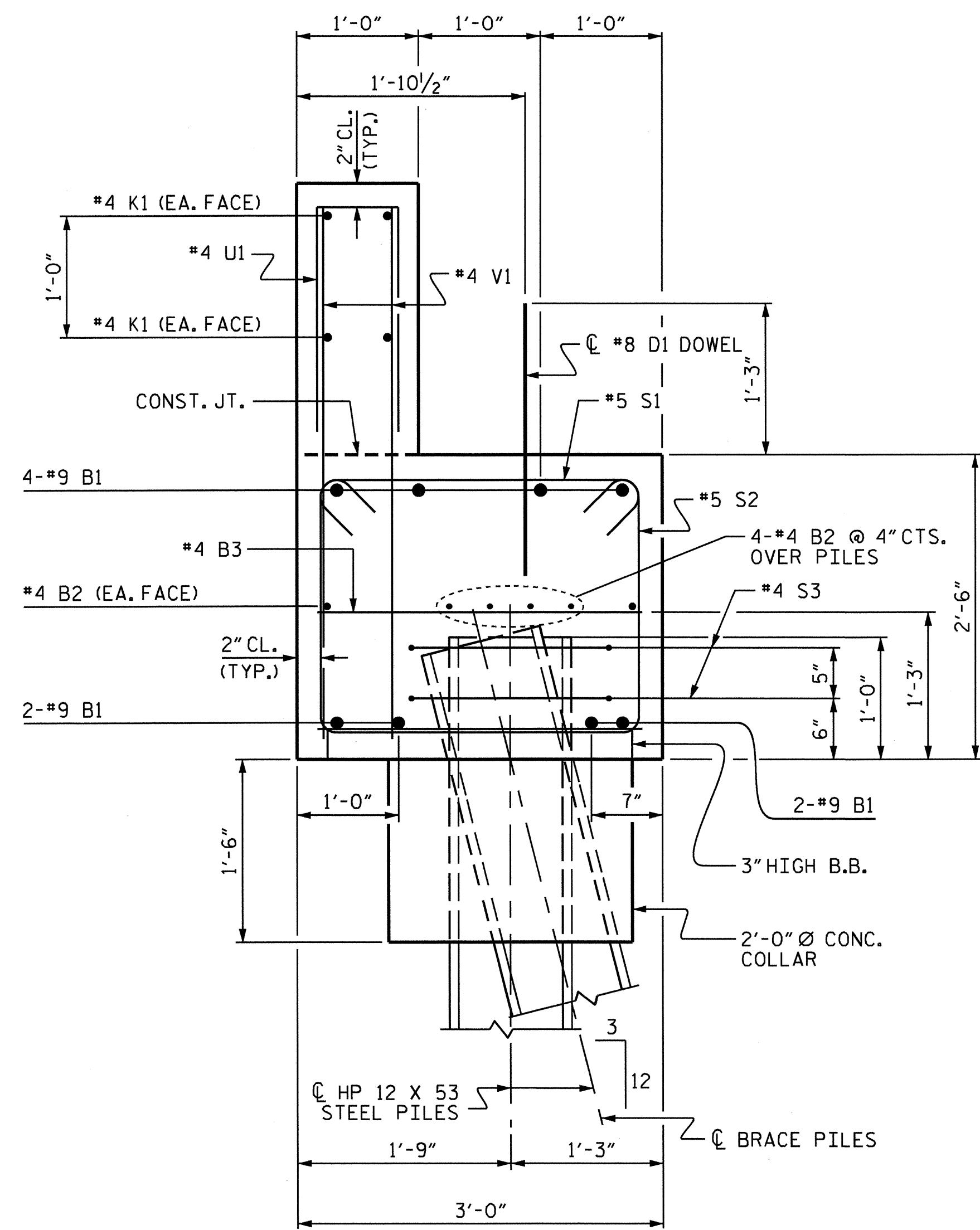
SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 2

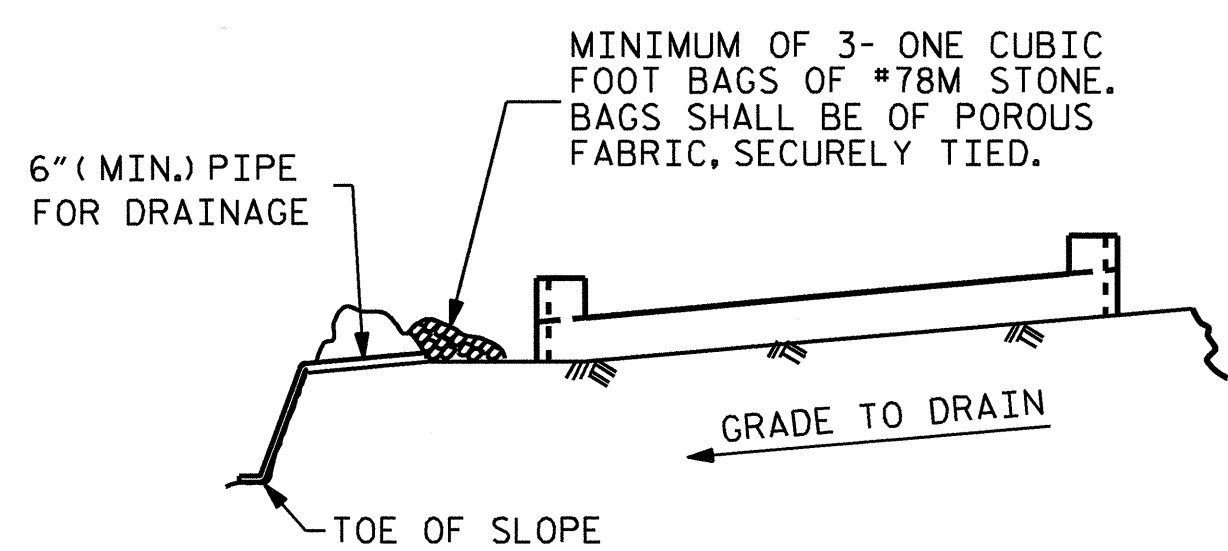
DRAWN BY: S. DOMBROWSKI DATE: 3/4/09  
 CHECKED BY: RAMAN PATEL DATE: 9/14/10

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**SECTION A-A**



BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

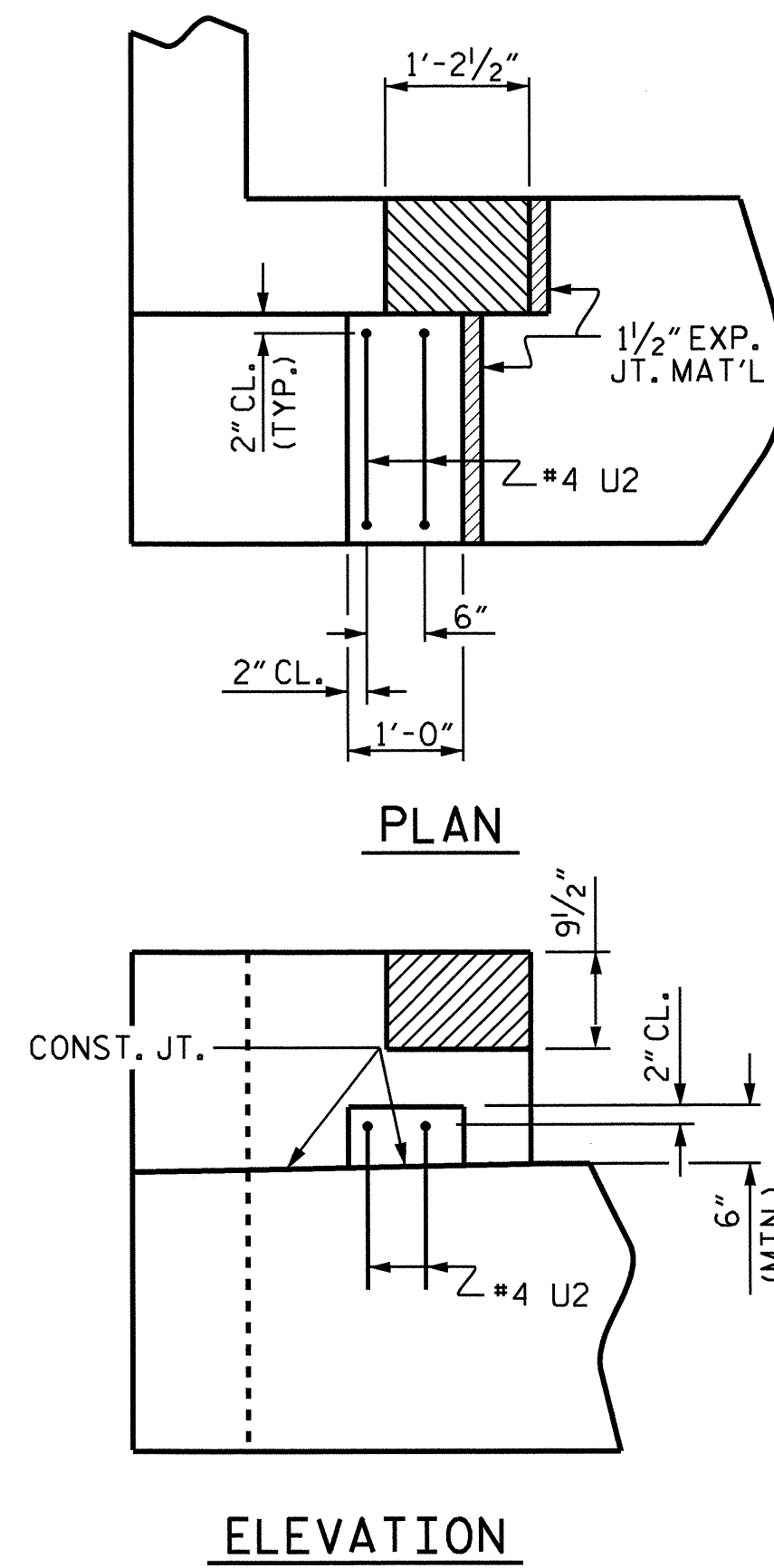
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

**TEMPORARY DRAINAGE AT END BENT**

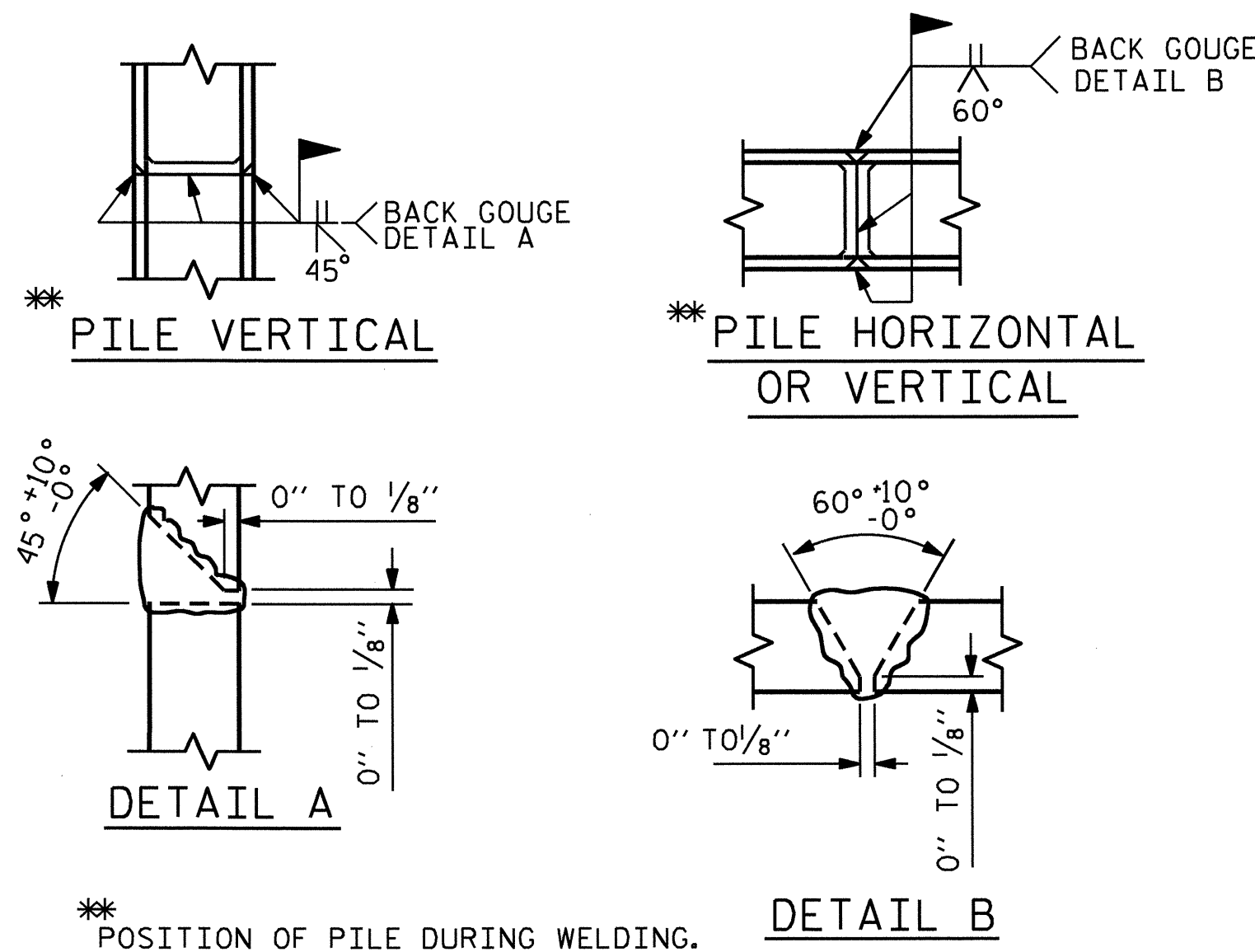
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 CHECKED BY : RAMAN PATEL DATE : 9/13/10

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 rrfang



**LATERAL GUIDE DETAILS**

(EACH END SIMILAR)



**PILE SPLICE DETAILS**

BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		38'-0"	1034
B2	12	#4	STR	19'-1"	153
B3	9	#4	STR	2'-8"	16
D1	20	#8	STR	2'-3"	120
H1	28	#4		8'-4"	156
K1	8	#4	STR	19'-1"	102
K2	8	#4	STR	2'-11"	16
S1	42	#4		3'-5"	96
S2	42	#4		7'-8"	215
S3	10	#4		6'-6"	43
U1	29	#4		3'-8"	71
U2	4	#4		4'-8"	12
V1	58	#4	STR	4'-2"	161
V2	24	#4	STR	6'-4"	102
V3	24	#4	STR	6'-2"	99
REINFORCING STEEL					2396 LBS.
CLASS A CONCRETE BREAKDOWN:					
POUR #1 (CONCRETE COLLARS, CAP & LOWER WINGS)				12.2 C.Y.	
POUR #2 (UPPER WINGS)				5.8 C.Y.	
POUR #3 (LATERAL GUIDES)				0.1 C.Y.	
TOTAL CLASS A CONCRETE:				18.1 C.Y.	
HP 12X53 STEEL PILES:					
NO. 5				75 LIN. FT.	
STEEL PILE POINTS				5 EA.	

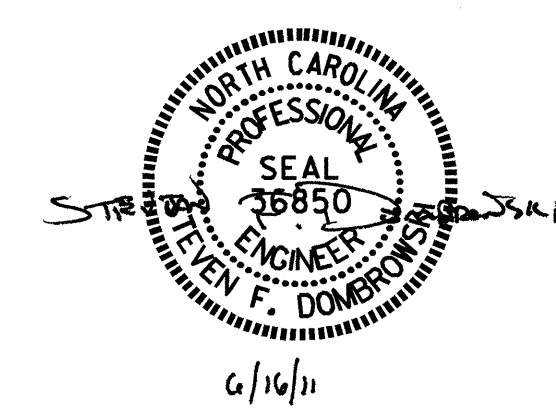
ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. B-4582  
MONTGOMERY COUNTY  
 STATION: 17+17.50 -L-

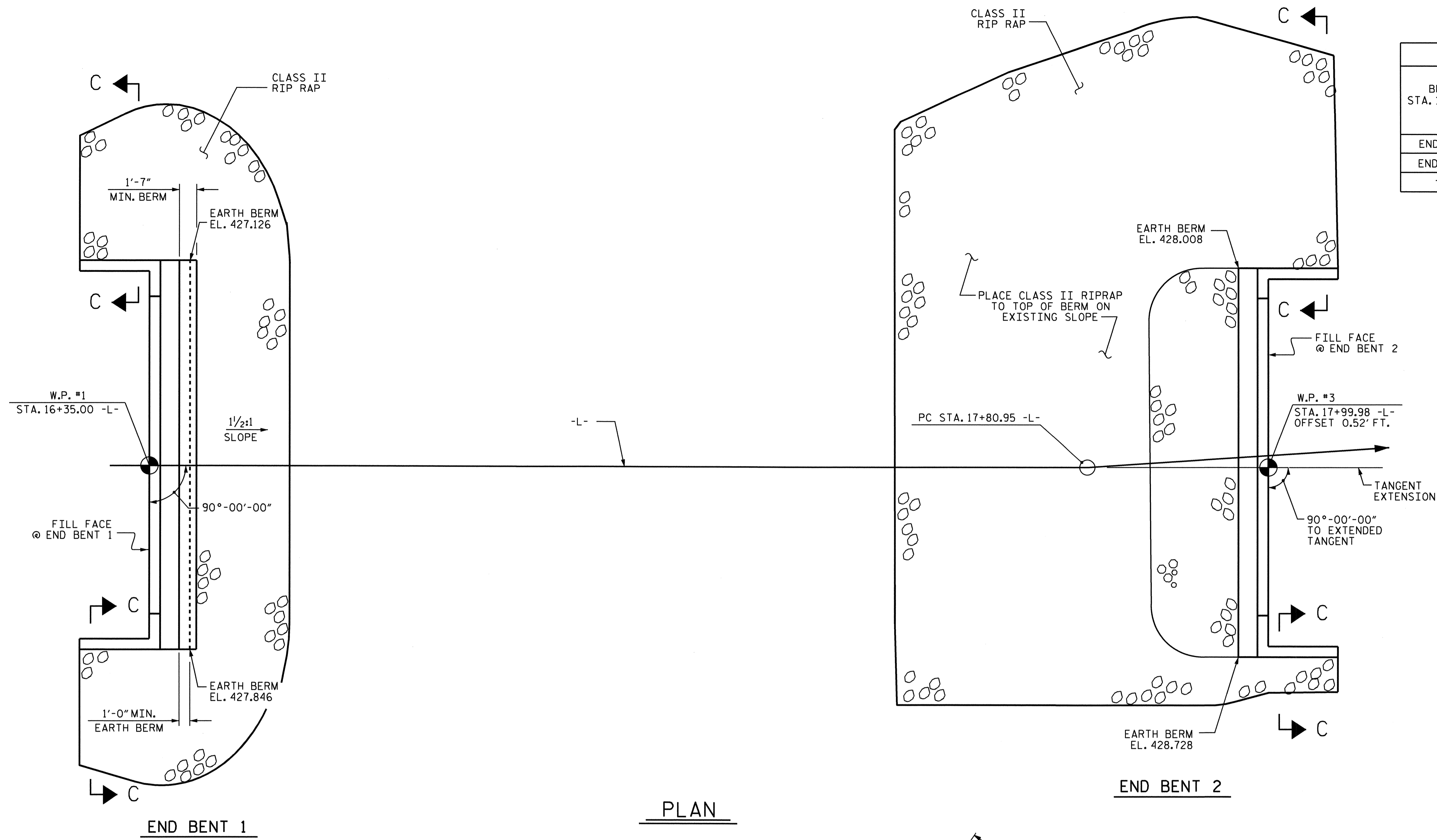
SHEET 3 OF 3  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 2

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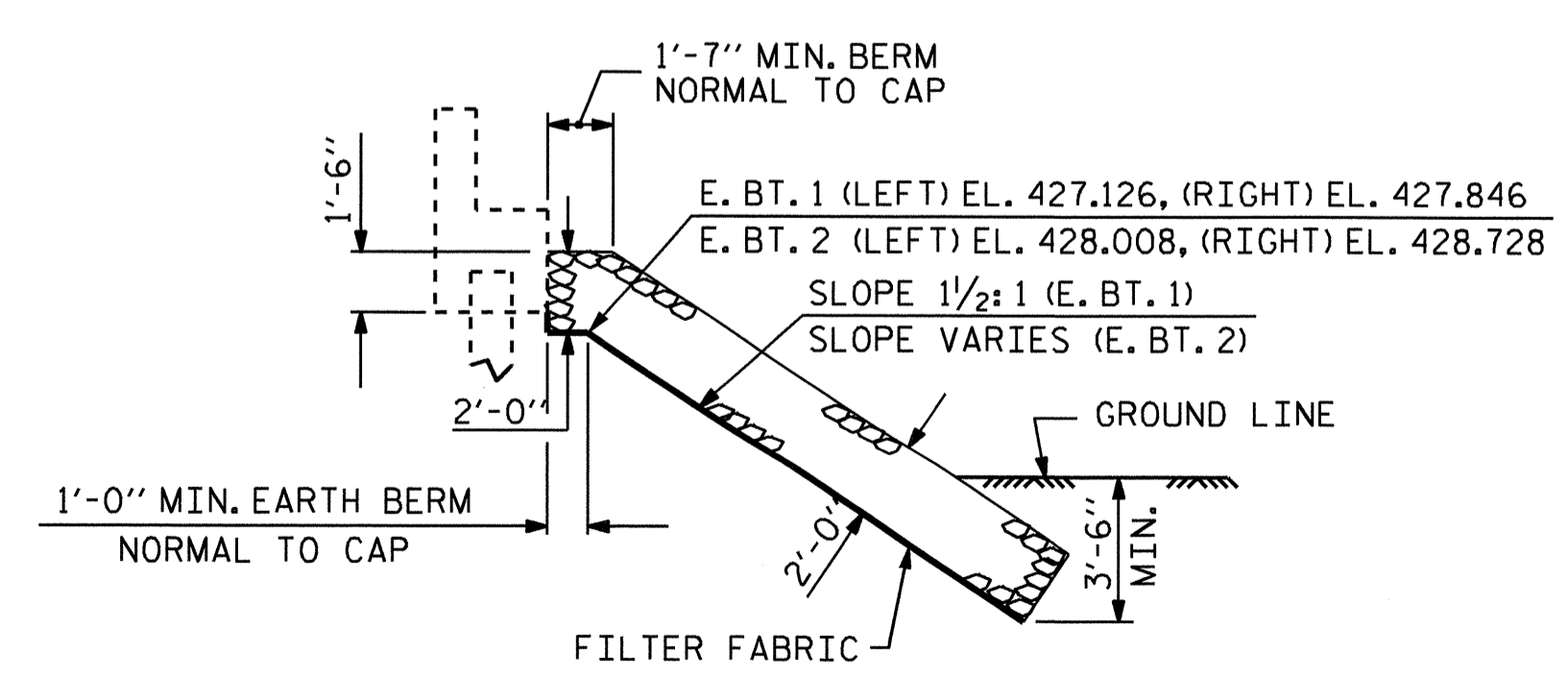
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 S-19  
 TOTAL SHEETS  
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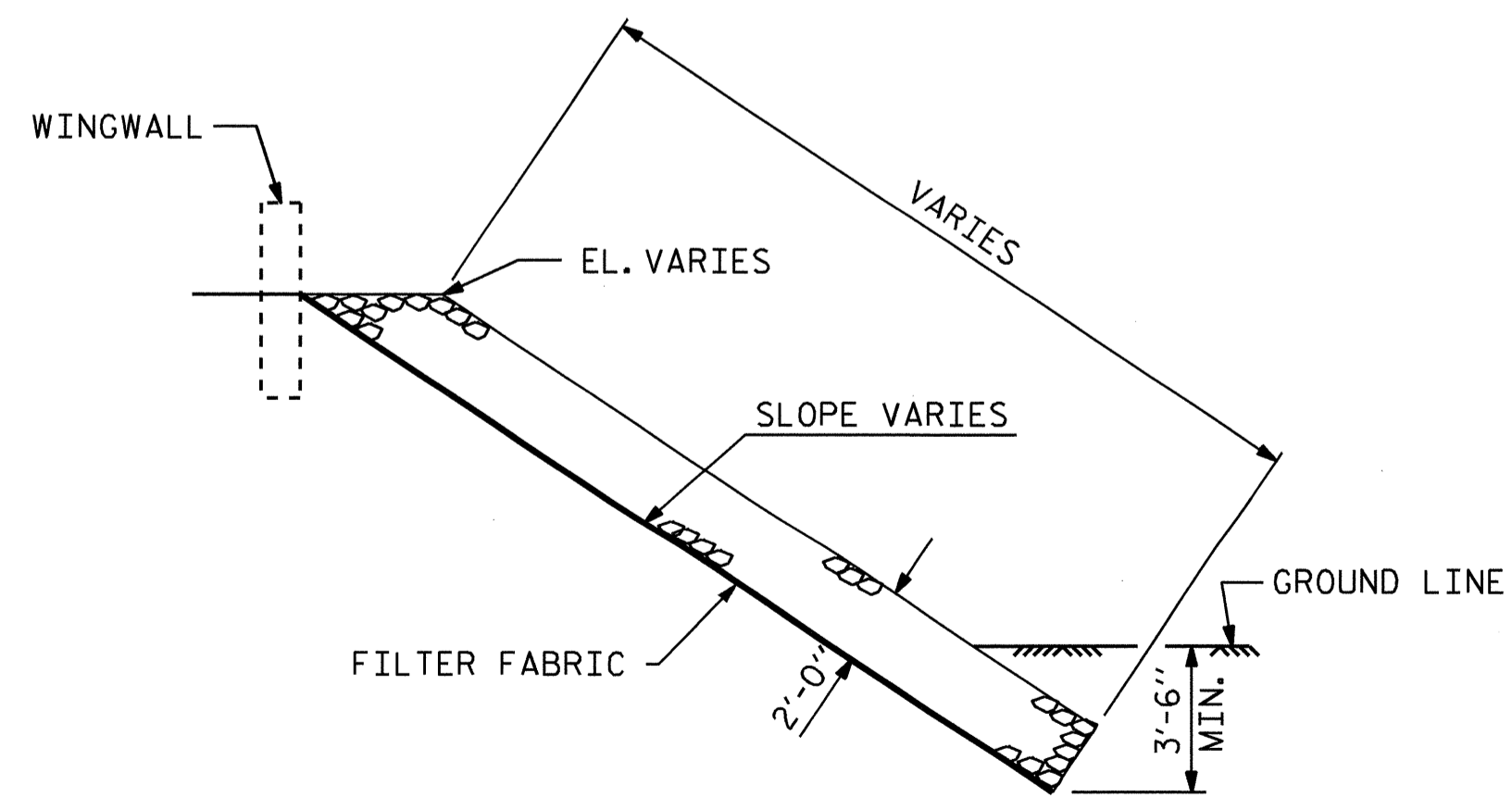
ESTIMATED QUANTITIES		
BRIDGE @ STA. 17+17.50 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	135	150
END BENT 2	260	290
TOTAL	395	440



PLAN

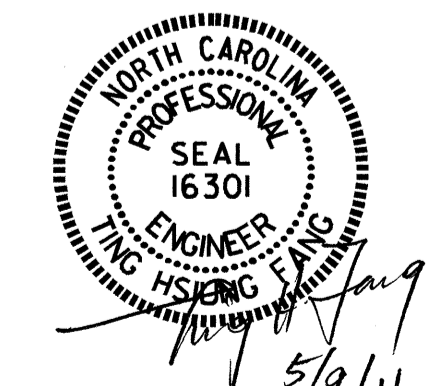


SECTION C-C  
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-4582  
MONTGOMERY COUNTY  
STATION: 17+17.50 -L-

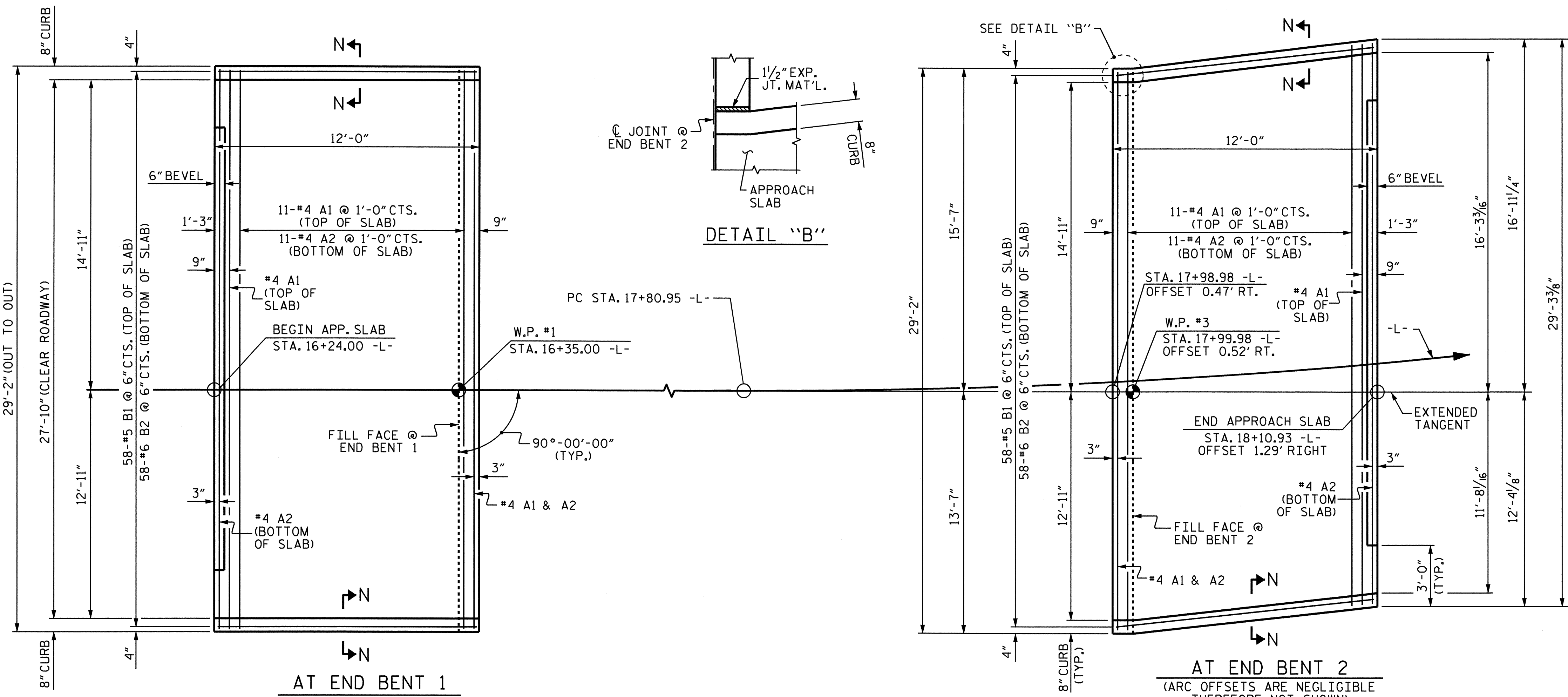


STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
RIP RAP DETAILS

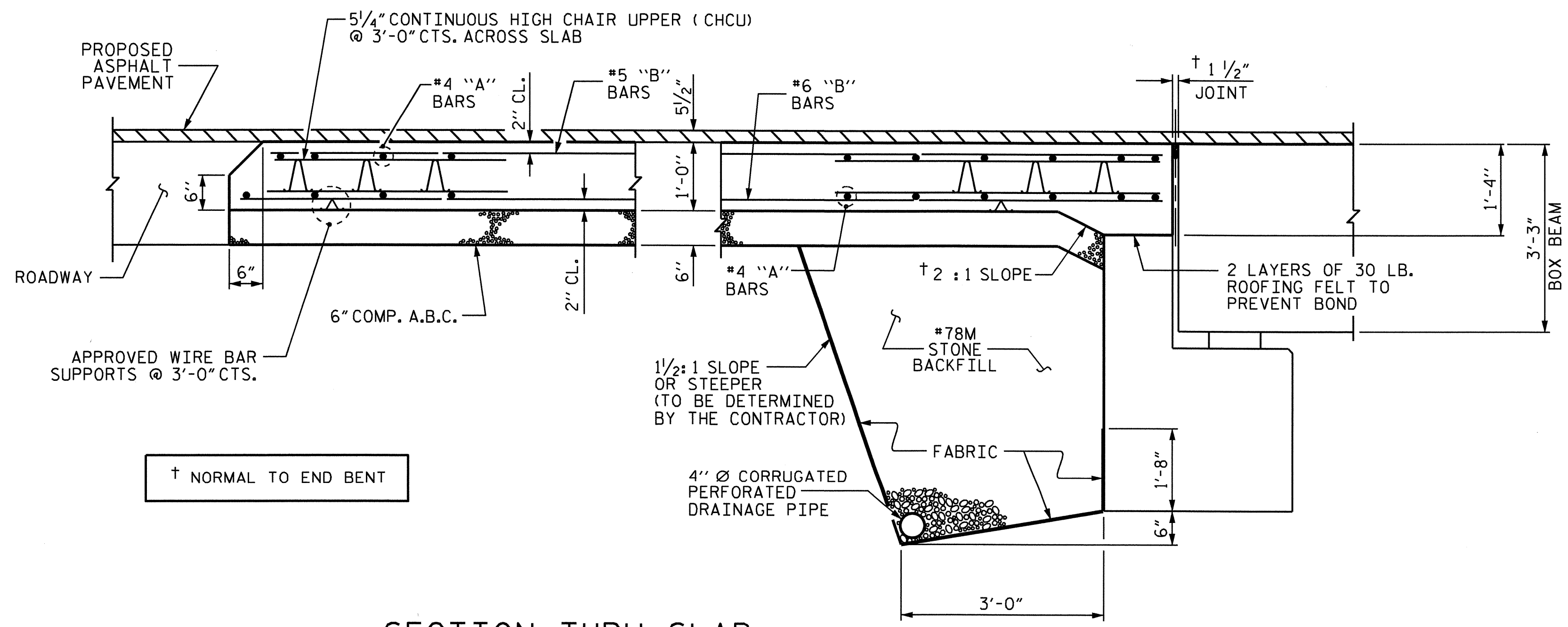
ASSEMBLED BY : HARISH SHAH	DATE : 1-29-10
CHECKED BY : T. H. FANG	DATE : 3-9-11
DRAWN BY : FCJ 2/88	REV. 8/16/99 RWW/LES
CHECKED BY : ARB 8/88	REV. 10/17/00 RWW/LES
	REV. 5/1/06 TLA/GM

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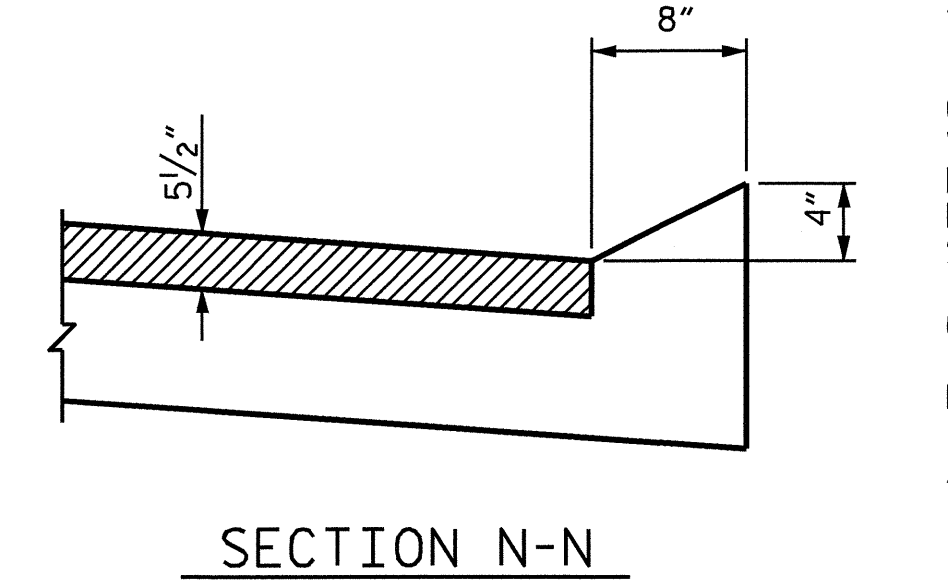
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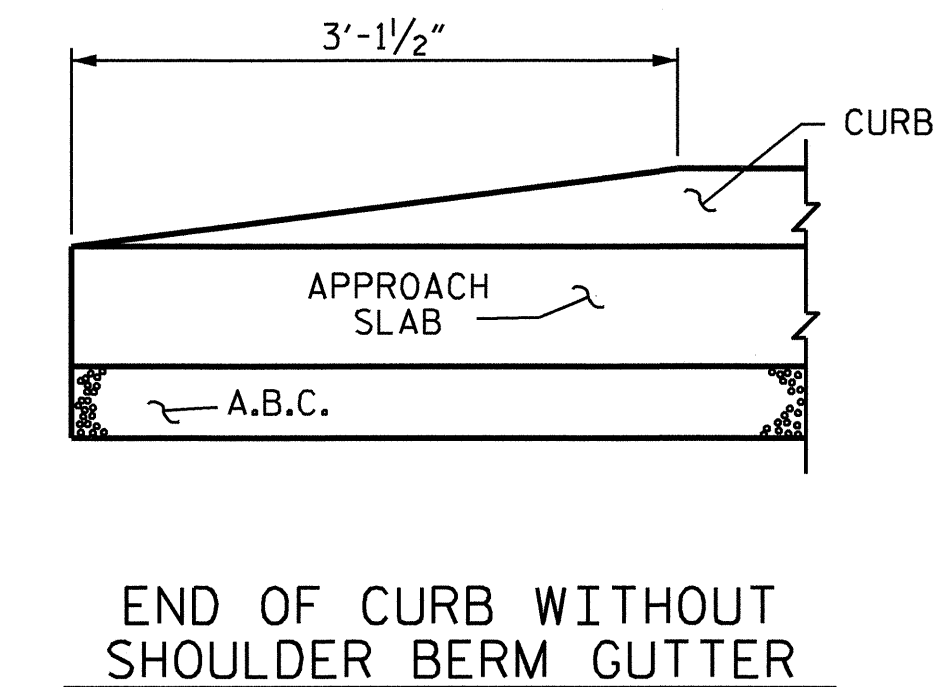
PLAN OF APPROACH SLAB



SECTION THRU SLAB



SECTION N-N



CURB DETAILS

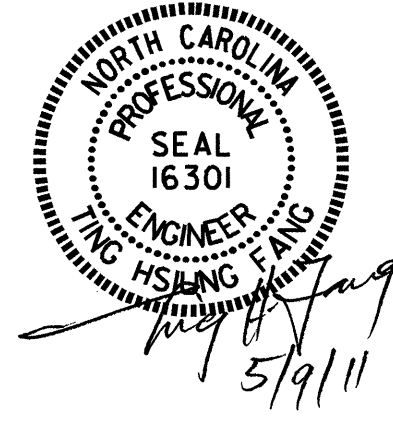
BILL OF MATERIAL					
FOR ONE APPROACH SLAB (2 REQUIRED)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	28'-10"	250
A2	13	#4	STR	28'-10"	250
*B1	58	#5	STR	11'-2"	676
B2	58	#6	STR	11'-8"	1016
REINFORCING STEEL				LBS.	1266
*EPOXY COATED REINFORCING STEEL				LBS.	926
CLASS AA CONCRETE				C. Y.	13.4

NOTES

- FOR BRIDGE APPROACH FILL INCLUDING FABRIC, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.
- APPROACH SLABS SHALL NOT BE CONSTRUCTED UNTIL AFTER BOX BEAM UNITS ARE IN PLACE.
- FABRIC SHALL BE TYPE I ENGINEERING FABRIC IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.
- #78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.
- #78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.
- FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
- THE 6" COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1'-0" OUTSIDE OF EACH EDGE OF THE APPROACH SLAB.
- THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.
- THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.
- FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE BOX BEAM UNIT" SHEETS.
- APPROACH SLAB GROOVING IS NOT REQUIRED.

ASSEMBLED BY : HARISH SHAH DATE : 1-29-10  
 CHECKED BY : T.H. FANG DATE : 3-25-11  
 DRAWN BY : KMM 3-08  
 CHECKED BY : GM 3-08

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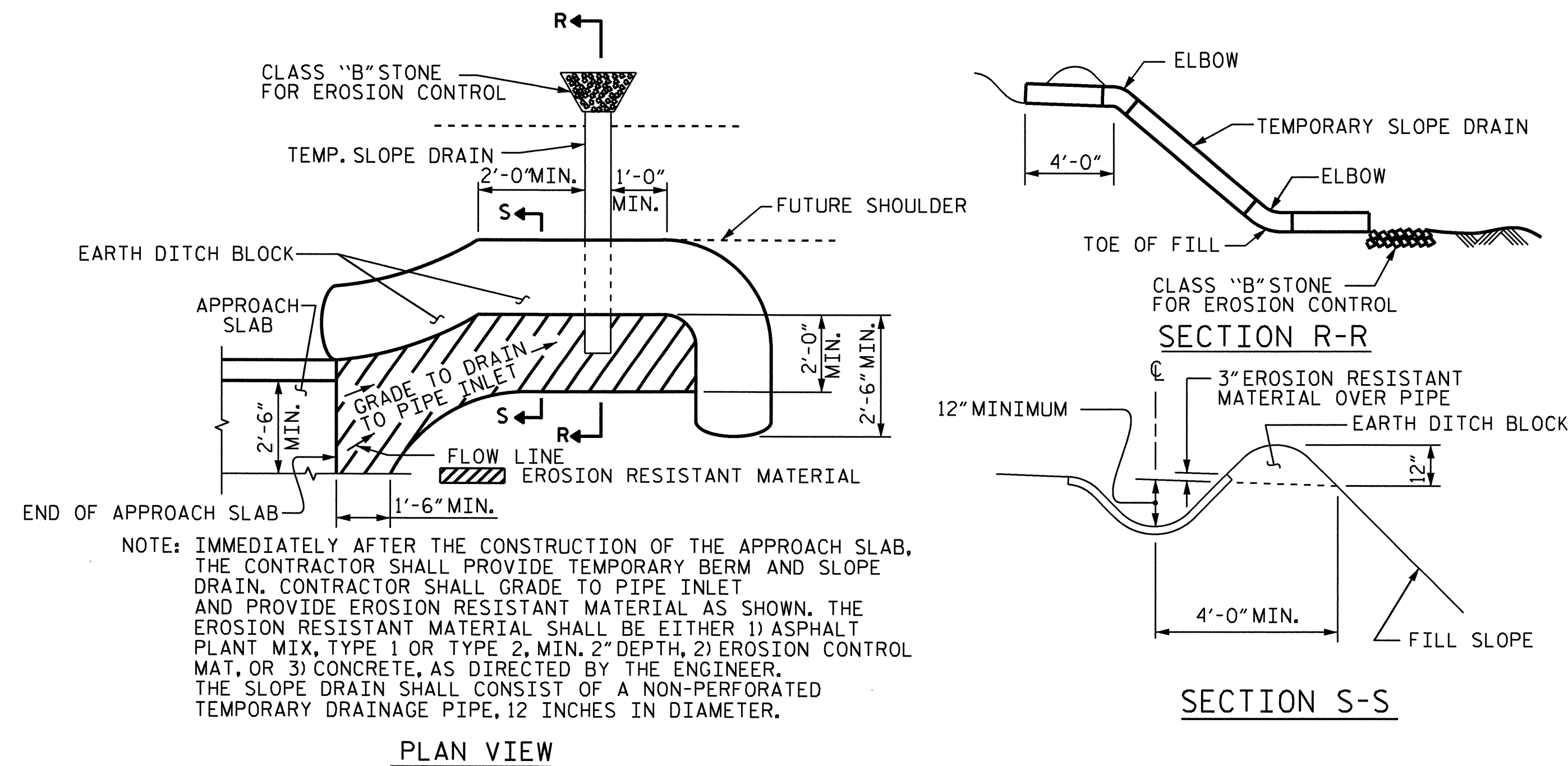
PROJECT NO. B-4582  
 MONTGOMERY COUNTY  
 STATION: 17+17.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 BRIDGE APPROACH SLAB  
 FOR PRESTRESSED CONCRETE  
 BOX BEAM UNIT  
 (SUB-REGIONAL TIER)

REVISIONS						SHEET NO.
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STD. NO. BAS13

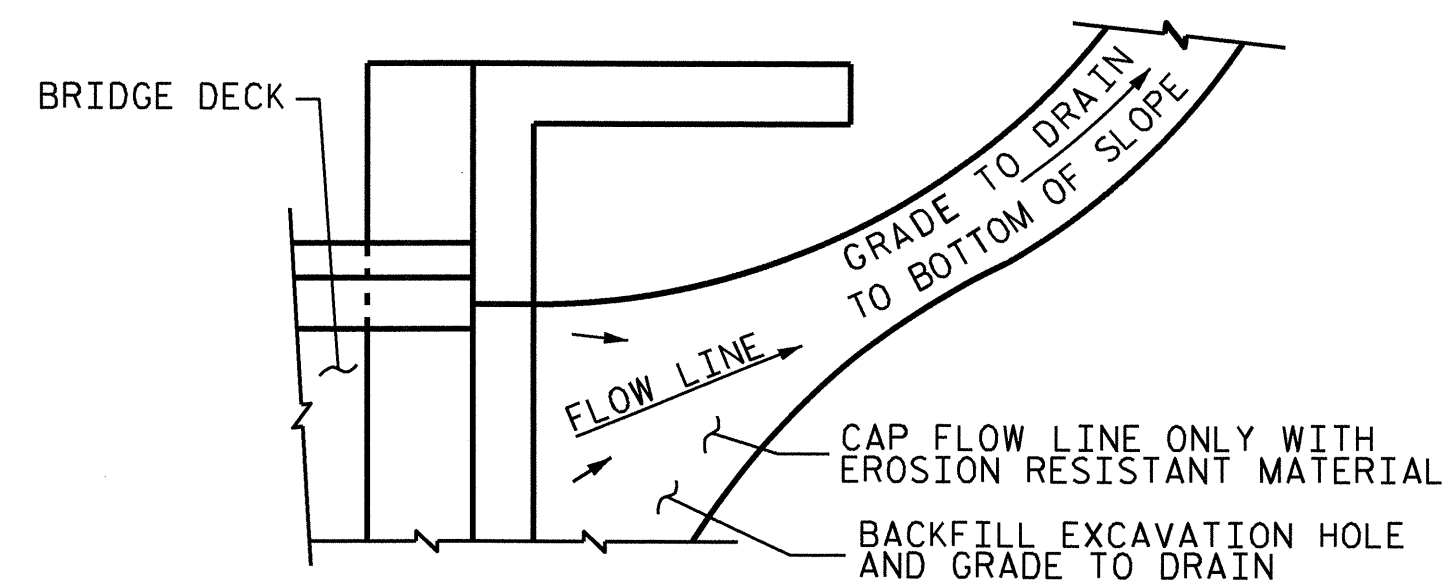


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN, CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

PLAN VIEW

**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



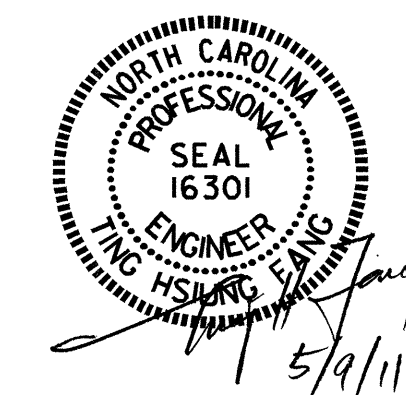
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL

PROJECT NO. B-4582  
MONTGOMERY COUNTY  
 STATION: 17+17.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 BRIDGE APPROACH  
 SLAB DETAILS



ASSEMBLED BY : HARISH SHAH	DATE : 2-02-10
CHECKED BY : T.H. FANG	DATE : 3-25-11
DRAWN BY : FCJ 11/88	REV. 10/17/00 RWW/LES
CHECKED BY : ARB 11/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06R MAA/KMM

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1			3			TOTAL SHEETS
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STD. NO. BAS10

## STANDARD NOTES

### DESIGN DATA:

SPECIFICATIONS	-----	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	-----	SEE PLANS
IMPACT ALLOWANCE	-----	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF		
STRUCTURAL STEEL - AASHTO M270 GRADE 36	-	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	-	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	-	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION		
GRADE 60	---	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION		
-----	-----	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR		
-----	-----	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR		
UNTREATED - EXTREME FIBER STRESS	-----	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN		
OF TIMBER	-----	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH		
-----	-----	30 LBS. PER CU. FT. (MINIMUM)

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2006 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N.C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

### CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

### CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

### DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

### ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE. ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN, WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDNATE, AND ACTUAL BEAM CAMBER, WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDNATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

### REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

### STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED, THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

### HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB. METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINISH AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

### SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN